This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

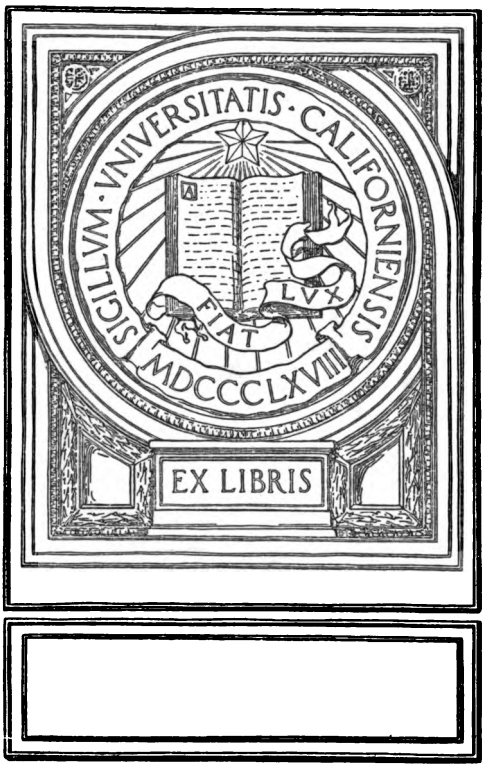
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

UC-NRLF
$B 233 464

Digitized by Google

H. Morris.
Ch. Ch.



Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

THE

WORKS

OF

GEORGE BERKELEY, D.D.

LATE BISHOP OF CLOYNE IN IRELAND.

TO WHICH IS ADDED,

AN ACCOUNT OF HIS LIFE;

AND

SEVERAL OF HIS LETTERS

TO

THOMAS PRIOR, ESQ. DEAN GERVAIS, MR. POPE, &c.

IN THREE VOLUMES.

VOL. II.

LONDON:

PRINTED BY J. F. DOVE, ST. JOHN'S SQUARE;

FOR RICHARD PRIESTLEY, 143, HIGH HOLBORN.

1820.

Digitized by Google

B1303
1820
v.2

Digitized by Google

CONTENTS TO VOL. II.

	Page
ALCIPHRON: or the Minute Philosopher, in seven Dialogues (continued)	1
Passive Obedience	251
Arithmetica absque Algebra aut Euclide demonstrata	293
Miscellanea Mathematica	337
De Motu	373
The Analyst	401

889197

Digitized by Google

Digitized by Google

Digitized by Google

UNIV. OF
CALIFORNIA

Digitized by Google

THE

MINUTE PHILOSOPHER.

THE THIRD DIALOGUE.

I. Alciphron's account of honour. II. Character and conduct of men of honour. III. Sense of moral beauty. IV. The honestum or τὸ καλὸν of the ancients. V. Taste for moral beauty, whether a sure guide or rule. VI. Minute philosophers ravished with the abstract beauty of virtue. VII. Their virtue alone disinterested and heroic. VIII. Beauty of sensible objects, what, and how perceived. IX. The idea of beauty explained by painting and architecture. X. Beauty of the moral system, wherein it consists. XI. It supposeth a Providence. XII. Influence of τὸ καλὸν and τὸ πρέπον. XIII. Enthusiasm of Cratylus compared with the sentiments of Aristotle. XIV. Compared with the Stoical principles. XV. Minute philosophers, their talent for raillery and ridicule. XVI. The wisdom of those who make virtue alone its own reward.

I. The following day as we sat round the tea-table, in a summer parlour which looks into the garden, Alciphron after the first dish turned down his cup, and reclining back on his chair proceeded as follows: Above all the sects upon earth it is the peculiar privilege of ours, not to be tied down by any principles. While other philosophers profess a servile adherence to certain tenets, ours assert a noble freedom, differing not only one from another, but very often the same man from himself. Which method of proceeding, beside other advantages, hath this annexed to it, that we are of all men the hardest to confute. You may, perhaps, confute a particular tenet, but then this affects only him who maintains it, and so long only as he maintains it. Some of our sect dog-

Digitized by Google

matize more than others, and in some more than other points. The doctrine of the usefulness of vice is a point wherein we are not all agreed. Some of us are great admirers of virtue; With others the points of vice and virtue are problematical. For my part, though I think the doctrine maintained yesterday by Lysicles an ingenious speculation; yet, upon the whole, there are divers reasons which incline me to depart from it, and rather to espouse the virtuous side of the question; with the smallest, perhaps, but the most contemplative and laudable part of our sect. It seemeth, I say, after a nice inquiry and balancing on both sides, that we ought to prefer virtue to vice; and that such preference would contribute both to the public weal, and the reputation of our philosophers. You are to know then, we have among us several that, without one grain of religion, are men of the nicest honour, and therefore men of virtue because men of honour. Honour is a noble unpolluted source of virtue, without the least mixture of fear, interest, or superstition. It hath all the advantages without the evils which attend religion. It is the mark of a great and fine soul, and is to be found among persons of rank and breeding. It affects the court, the senate, and the camp, and in general every rendezvous of people of fashion. *Euph.* You say then, that honour is the source of virtue? *Alc.* I do. *Euph.* Can a thing be the source of itself? *Alc.* It cannot. *Euph.* The source, therefore, is distinguished from that of which it is the source? *Alc.* Doubtless. *Euph.* Honour then is one thing, and virtue another? *Alc.* I grant it. Virtuous actions are the effect, and honour is the source or cause of that effect. *Euph.* Tell me. Is honour the will producing those actions, or the final cause for which they are produced, or right reason which is their rule and limit, or the object about which they are conversant? or do you by the word *honour*, understand a faculty or appetite? all which are supposed, in one sense or other, to be the

Digitized by Google

source of human actions. *Alc.* Nothing of all this. *Euph.* Be pleased then to give me some notion or definition of it. Alciphron having mused a while answered, that he defined honour to be a principle of virtuous actions. To which Euphranor replied: if I understand it rightly, the word principle is variously taken. Sometimes by principles we mean the parts of which a whole is composed, and into which it may be resolved. Thus the elements are said to be principles of compound bodies. And thus words, syllables, and letters, are the principles of speech. Sometimes by principle we mean a small particular seed, the growth or gradual unfolding of which doth produce an organized body, animal or vegetable, in its proper size and shape. Principles at other times are supposed to be certain fundamental theorems in arts and sciences, in religion and politics. Let me know in which of these senses, or whether it be in some other sense, that you understand this word, when you say honour is a principle of virtue. To this Alciphron replied, that for his part he meant it in none of those senses, but defined honour to be a certain ardour or enthusiasm that glowed in the breast of a gallant man. Upon this, Euphranor observed, it was always admitted to put the definition in place of the thing defined. Is this allowed, said he, or not? *Alc.* It is. *Euph.* May we not therefore say, that a man of honour is a warm man, or an enthusiast? Alciphron hearing this, declared that such exactness was to no purpose; that pedants, indeed, may dispute and define, but could never reach that high sense of honour, which distinguished the fine gentleman, and was a thing rather to be felt than explained.

II. Crito perceiving that Alciphron could not bear being pressed any farther on that article, and willing to give some satisfaction to Euphranor, said, that of himself indeed he should not undertake to explain so nice a point, but he would retail to them part of a conversation

Digitized by Google

he once heard between *Nicander* a minute philosopher and *Menecles* a Christian, upon the same subject, which was for substance as follows. *M.* From what principle are you gentlemen virtuous? *N.* From honour. We are men of honour. *M.* May not a man of honour debauch another's wife, or get drunk, or sell a vote, or refuse to pay his debts, without lessening or tainting his honour? *N.* He may have the vices and faults of a gentleman: but is obliged to pay debts of honour, that is, all such as are contracted by play. *M.* Is not your man of honour always ready to resent affronts and engage in duels? *N.* He is ready to demand and give gentleman's satisfaction upon all proper occasions. *M.* It should seem by this account, that to ruin tradesmen, break faith to one's own wife, corrupt another man's, take bribes, cheat the public, cut a man's throat for a word, are all points consistent with your principle of honour. *N.* It cannot be denied that we are men of gallantry, men of fire, men who know the world, and all that. *M.* It seems therefore that honour among infidels is like honesty among pirates: something confined to themselves, and which the fraternity perhaps may find their account in, but every one else should be constantly on his guard against. By this dialogue, continued Crito, a man, who lives out of the grand *monde*, may be enabled to form some notion of what the world calls honour and men of honour. *Euph.* I must entreat you not to put me off with Nicander's opinion, whom I know nothing of, but rather give me your own judgment, drawn from your own observation upon men of honour. *Cri.* If I must pronounce, I can very sincerely assure you, that by all I have heard or seen, I could never find, that honour, considered as a principle distinct from conscience, religion, reason, and virtue, was more than an empty name. And I do verily believe, that those who build upon that notion have less virtue than other men, and that what they have or seem to have is owing

Digitized by Google

to fashion (being of the reputable kind), if not to a conscience early imbued with religious principles, and afterwards retaining a tincture from them without knowing it. These two principles seem to account for all that looks like virtue in those gentlemen. Your men of fashion in whom animal life abounds, a sort of bullies in morality, who disdain to have it thought they are afraid of conscience; these descant much upon honour, and affect to be called men of honour, rather than conscientious or honest men. But, by all that I could ever observe, this specious character, where there is nothing of conscience or religion underneath, to give it life and substance, is no better than a meteor or painted cloud. *Euph.* I had a confused notion that honour was something connected with truth, and that men of honour were the greatest enemies to all hypocrisy, fallacy, and disguise. *Cri.* So far from that, an infidel who sets up for the nicest honour shall, without the least grain of faith or religion, pretend himself a Christian, take any test, join in any act of worship, kneel, pray, receive the sacrament, to serve an interest. The same person, without any impeachment of his honour, shall most solemnly declare and promise, in the face of God and the world, that he will love his wife, and forsaking all others keep only to her, when at the same time it is certain, he intends never to perform one tittle of his vow; and convinceth the whole world of this as soon as he gets her in his power, and her fortune, for the sake of which this man of untainted honour makes no scruple to cheat and lie. *Euph.* We have a notion here in the country, that it was of all things most odious, and a matter of much risk and hazard, to give the lie to a man of honour. *Cri.* It is very true. He abhors to take the lie, but not to tell it.

III. Alciphron, having heard all this with great composure of mind and countenance, spake as follows. You are not to think, that our greatest strength lies in our

Digitized by Google

greatest number, libertines, and mere men of honour. No: we have among us philosophers of a very different character, men of curious contemplation, not governed by such gross things as sense and custom, but of an abstracted virtue and sublime morals: and the less religious the more virtuous. For virtue of the high and disinterested kind, no man is so well qualified as an infidel, it being a mean and selfish thing to be virtuous through fear or hope. The notion of a Providence and future state of rewards and punishments, may indeed tempt or scare men of abject spirit into practices contrary to the natural bent of their souls, but will never produce a true and genuine virtue. To go to the bottom of things, to analyse virtue into its first principles, and fix a scheme of duty on its true basis, you must understand, that there is an idea of beauty natural to the mind of man. This all men desire, this they are pleased and delighted with for its own sake, purely from an instinct of nature. A man needs no arguments to make him discern and approve what is beautiful; it strikes at first sight, and attracts without a reason. And as this beauty is found in the shape and form of corporeal things; so also is there analogous to it a beauty of another kind, an order, a symmetry, and comeliness, in the moral world. And as the eye perceiveth the one, so the mind doth by a certain interior sense perceive the other, which sense, talent, or faculty, is ever quickest and purest in the noblest minds. Thus as by sight I discern the beauty of a plant or an animal, even so the mind apprehends the moral excellence, the beauty, and decorum, of justice and temperance. And as we readily pronounce a dress becoming, or an attitude graceful, we can, with the same free untutored judgment, at once declare, whether this or that conduct or action be comely and beautiful. To relish this kind of beauty, there must be a delicate and fine taste: but where there is this natural taste, nothing further is wanting, either as a prin-

Digitized by Google

ciple to convince, or as a motive to induce, men to the love of virtue. And more or less there is of this taste or sense in every creature that hath reason. All rational beings are by nature social. They are drawn one towards another by natural affections: they unite and incorporate into families, clubs, parties, and commonwealths, by mutual sympathy. As by means of the sensitive soul, our several distinct parts and members do consent towards the animal functions, and are connected in one whole; even so, the several parts of these rational systems or bodies politic, by virtue of this moral or interior sense, are held together, have a fellow-feeling, do succour and protect each other, and jointly cooperate towards the same end. Hence that joy in society, that propension towards doing good to our kind, that gratulation and delight in beholding the virtuous deeds of other men, or on reflecting in our own. By contemplation of the fitness and order of the parts of a moral system, regularly operating, and knit together by benevolent affections, the mind of man attaineth to the highest notion of beauty, excellence, and perfection: seized and wrapped with this sublime idea, our philosophers do infinitely despise and pity whoever shall propose or accept any other motive to virtue. Interest is a mean ungenerous thing, destroying the merit of virtue; and falsehood of every kind is inconsistent with the genuine spirit of philosophy. *Cri.* The love therefore that you bear to moral beauty, and your passion for abstracted truth, will not suffer you to think with patience of those fraudulent impositions upon mankind, Providence, the immortality of the soul, and a future retribution of rewards and punishments; which, under the notion of promoting, do, it seems, destroy all true virtue, and at the same time contradict and disparage your noble theories, manifestly tending to the perturbation and disquiet of men's minds, and filling them with fruitless hopes and vain terrors. *Alc.* Men's first

Digitized by Google

thoughts and natural notions are the best in moral matters. And there is no need, that mankind should be preached, or reasoned, or frightened into virtue, a thing so natural and congenial to every human soul. Now if this be the case, as it certainly is, it follows, that all the ends of society are secured without religion, and that an infidel bids fair to be the most virtuous man, in a true, sublime, and heroic sense.

IV. *Euph.* O Alciphron, while you talk, I feel an affection in my soul like the trembling of one lute upon striking the unison strings of another. Doubtless there is a beauty of the mind, a charm in virtue, a symmetry and proportion in the moral world. This moral beauty was known to the ancients by the name of *honestum* or τὸ καλὸν. And in order to know its force and influence, it may not be amiss to inquire, what it was understood to be, and what light it was placed in, by those who first considered it, and gave it a name: τὸ καλὸν according to Aristotle is the ἐπαινετὸν or *laudable*; according to Plato it is the ἡδὺ or ὠφέλιμον, *pleasant* or *profitable*, which is meant with respect to a reasonable mind and its true interest. Now I would feign know whether a mind, which considers an action as laudable, be not carried beyond the bare action itself, to regard the opinion of others concerning it? *Alc.* It is. *Euph.* And whether this be a sufficient ground or principle of virtue, for a man to act upon, when he thinks himself removed from the eye and observation of every other intelligent being? *Alc.* It seems not. *Euph.* Again, I ask, whether a man who doth a thing pleasant or profitable, as such, might not be supposed to forbear doing it, or even to do the contrary, upon the prospect of greater pleasure or profit? *Alc.* He might. *Euph.* Doth it not follow from hence, that the beauty of virtue, or τὸ καλὸν, in either Aristotle's or Plato's sense, is not a sufficient principle or ground, to engage sensual and worldly-minded men in the practice of it? *Alc.* What then?

Digitized by Google

Euph. Why then it will follow, that hope of reward and fear of punishment are highly expedient to cast the balance of pleasant and profitable on the side of virtue, and thereby very much conduce to the benefit of human society. Alciphron upon this appealed; Gentlemen, said he, you are witnesses of this unfair proceeding of Euphranor, who argues against us from explications given by Plato and Aristotle of the beauty of virtue, which are things we have nothing to say to; the philosophers of our sect abstracting from all praise, pleasure, and interest, when they are enamoured and transported with that sublime idea. I beg pardon, replied Euphranor, for supposing the minute philosophers of our days think like those ancient sages. But you must tell me, Alciphron, since you do not think fit to adopt the sense of Plato or Aristotle, what sense it is in which you understand the beauty of virtue? Define it, explain it, make me to understand your meaning, that so we may argue about the same thing, without which we can never come to a conclusion.

V. *Alc.* Some things are better understood by definitions and descriptions, but I have always observed that those who would define, explain, and dispute about, this point, make the least of it. Moral beauty is of so peculiar and abstracted a nature, something so subtle, fine, and fugacious, that it will not bear being handled and inspected, like every gross and common subject. You will, therefore, pardon me, if I stand upon my philosophic liberty; and choose rather to intrench myself, within the general and indefinite sense, rather than, by entering into a precise and particular explication of this beauty, perchance lose sight of it, or give you some hold whereon to cavil, and infer, and raise doubts, queries, and difficulties, about a point as clear as the sun when nobody reasons upon it. *Euph.* How say you, Alciphron, is that notion clearest when it is not considered? *Alc.* I say it is rather to be felt than understood,

Digitized by Google

a certain *je ne sçai quoi*. An object, not of the discursive faculty, but of a peculiar sense, which is properly called the moral sense, being adapted to the perception of moral beauty, as the eye to colours, or the ear to sounds. *Euph.* That men have certain instinctive sensations or passions from nature, which make them amiable and useful to each other, I am clearly convinced. Such are a fellow-feeling with the distressed, a tenderness for our offspring, an affection towards our friends, our neighbours, and our country, an indignation against things base, cruel, or unjust. These passions are implanted in the human soul, with several other fears and appetites, aversions and desires, some of which are strongest and uppermost in one mind, others in another. Should it not therefore seem a very uncertain guide in morals, for a man to follow his passion or inward feeling; and would not this rule infallibly lead different men different ways, according to the prevalency of this or that appetite or passion? *Alc.* I do not deny it. *Euph.* And will it not follow from hence, that duty and virtue are in a fairer way of being practised, if men are led by reason and judgment, balancing low and sensual pleasures with those of a higher kind, comparing present losses with future gains, and the uneasiness and disgust of every vice with the delightful practice of the opposite virtue, and the pleasing reflections and hopes which attend it? Or can there be a stronger motive to virtue, than the shewing that, considered in all lights, it is every man's true interest?

VI. *Alc.* I tell you, Euphranor, we contemn the virtue of that man, who computes and deliberates, and must have a reason, for being virtuous. The refined moralists of our sect are ravished and transported with the abstract beauty of virtue. They disdain all forensic motives to it; and love virtue only for virtue's sake. Oh rapture! oh enthusiasm! oh the quintessence of beauty! methinks I could dwell for ever on this con-

Digitized by Google

temptation: but rather than entertain myself, I must endeavour to convince you. Make an experiment on the first man you meet. Propose a villanous or unjust action. Take his first sense of the matter, and you shall find he detests it. He may, indeed, be afterwards misled by arguments, or overpowered by temptation, but his original, unpremeditated, and genuine thoughts, are just and orthodox. How can we account for this but by a moral sense, which, left to itself, hath as quick and true a perception of the beauty and deformity of human actions, as the eye hath of colours? *Euph.* May not this be sufficiently accounted for, by conscience, affection, passion, education, reason, custom, religion, which principles and habits, for aught I know, may be what you metaphorically call a moral sense. *Alc.* What I call a moral sense is strictly, properly, and truly such, and in kind different from all those things you enumerate. It is what all men have, though all may not observe it. Upon this Euphranor smiled and said, Alciphron has made discoveries where I least expected it. For, said he, in regard to every other point, I should hope to learn from him; but for the knowledge of myself, or the faculties and powers of my own mind, I should have looked at home. And there I might have looked long enough, without finding this new talent, which even now after being tutored I cannot comprehend. For Alciphron, I must needs say, is too sublime and enigmatical upon a point, which of all others ought to be most clearly understood. I have often heard that your deepest adepts and oldest professors in science are the obscurest. Lysicles is young, and speaks plain. Would he but favour us with his sense of this point, it might perhaps prove more upon a level with my apprehension.

VII. Lysicles shook his head, and in a grave and earnest manner addressed the company. Gentlemen, said he, Alciphron stands upon his own legs. I have

Digitized by Google

no part in these refined notions he is at present engaged to defend. If I must subdue my passions, abstract, contemplate, be enamoured of virtue; in a word, if I must be an enthusiast, I owe so much deference to the laws of my country, as to choose being an enthusiast in their way. Besides, it is better being so for some end than for none. This doctrine hath all the solid inconveniences, without the amusing hopes and prospects, of the Christian. *Alc.* I never counted on Lysicles for my second in this point; which after all doth not need his assistance or explication. All subjects ought not to be treated in the same manner. The way of definition and division is dry and pedantic. Besides, the subject is sometimes too obscure, sometimes too simple, for this method. One while we know too little of a point, another too much, to make it plainer by discourse. *Cri.* To hear Alciphron talk puts me in mind of that ingenious Greek, who, having wrapped a man's brother up in a cloak, asked him whether he knew that person; being ready, either by keeping on or pulling off the cloak, to confute his answer whatever it should be. For my part I believe, if matters were fairly stated, that rational satisfaction, that peace of mind, that inward comfort, and conscientious joy, which a good Christian finds in good actions, would not be found to fall short of all the ecstasy, rapture, and enthusiasm, supposed to be the effect of that high and undescribed principle. In earnest can any ecstasy be higher, any rapture more affecting, than that which springs from the love of God and man from a conscience void of offence, and an inward discharge of duty, with the secret delight, trust, and hope, that attend it? O Euphranor, we votaries of truth do not envy, but pity, the groundless joys and mistaken hopes of a Christian. And, as for conscience and rational pleasure, how can we allow a conscience without allowing a vindictive Providence? Or how can we suppose, the charm of virtue consists in any pleasure or benefit

Digitized by Google

attending virtuous actions, without giving great advantages to the Christian religion, which it seems excites its believers to virtue by the highest interests and pleasures in reversion. Alas! should we grant this, there would be a door opened to all those rusty declaimers upon the necessity and usefulness of the great points of faith, the immortality of the soul, a future state, rewards and punishments, and the like exploded conceits; which, according to our system and principles, may perhaps produce a low, popular, interested kind of virtue, but must absolutely destroy and extinguish it in the sublime and heroic sense.

VIII. *Euph.* What you now say is very intelligible: I wish I understood your main principle as well. *Alc.* And are you then in earnest at a loss? Is it possible you should have no notion of beauty, or that having it you should not know it to be amiable, amiable I say, in itself, and for itself? *Euph.* Pray tell me, Alciphron, are all mankind agreed in the notion of a beauteous face? *Alc.* Beauty in human kind seems to be of a mixed and various nature; forasmuch as the passions, sentiments, and qualities, of the soul being seen through and blending with the features, work differently on different minds, as the sympathy is more or less. But with regard to other things is there no steady principle of beauty? Is there upon earth a human mind without the idea of order, harmony, and proportion? *Euph.* O Alciphron, it is my weakness that I am apt to be lost and bewildered in abstractions and generalities, but a particular thing is better suited to my faculties. I find it easy to consider and keep in view the objects of sense, let us therefore try to discover what their beauty is, or wherein it consists; and so, by the help of these sensible things, as a scale or ladder, ascend to moral and intelligible beauty. Be pleased then to inform me, what it is we call beauty in the objects of sense? *Alc.* Every one knows beauty is that which pleases. *Euph.*

Digitized by Google

There is then beauty in the smell of a rose, or the taste of an apple. *Alc.* By no means. Beauty is, to speak properly, perceived only by the eye. *Euph.* It cannot therefore be defined in general that which pleaseth. *Alc.* I grant it cannot. *Euph.* How then shall we limit or define it? Alciphron, after a short pause, said, that beauty consisted in a certain symmetry or proportion pleasing to the eye. *Euph.* Is this proportion one and the same in all things, or is it different in different kinds of things? *Alc.* Different, doubtless: the proportions of an ox would not be beautiful in a horse. And we may observe also in things inanimate, that the beauty of a table, a chair, a door, consists in different proportions. *Euph.* Doth not this proportion imply the relation of one thing to another? *Alc.* It doth. *Euph.* And are not these relations founded in size and shape? *Alc.* They are. *Euph.* And to make the proportions just, must not those mutual relations of size and shape in the parts be such as shall make the whole complete and perfect in its kind? *Alc.* I grant they must. *Euph.* Is not a thing said to be perfect in its kind, when it answers the end for which it was made? *Alc.* It is. *Euph.* The parts, therefore, in true proportions must be so related, and adjusted to one another, as that they may best conspire to the use and operation of the whole? *Alc.* It seems so. *Euph.* But the comparing parts one with another, the considering them as belonging to one whole, and the referring this whole to its use or end, should seem the work of reason; should it not? *Alc.* It should. *Euph.* Proportions therefore are not, strictly speaking, perceived by the sense of sight, but only by reason through the means of sight. *Alc.* This I grant. *Euph.* Consequently beauty, in your sense of it, is an object, not of the eye, but of the mind. *Alc.* It is. *Euph.* The eye therefore alone cannot see, that a chair is handsome, or a door well proportioned. *Alc.* It seems to follow; but I am not clear as to this

Digitized by Google

point. *Euph.* Let us see if there be any difficulty in it. Could the chair you sit on, think you, be reckoned well proportioned or handsome, if it had not such a height, breadth, wideness, and was not so far reclined as to afford a convenient seat? *Alc.* It could not. *Euph.* The beauty, therefore, or symmetry of a chair, cannot be apprehended but by knowing its use, and comparing its figure with that use, which cannot be done by the eye alone, but is the effect of judgment. It is therefore, one thing to see an object, and another to discern its beauty. *Alc.* I admit this to be true.

IX. *Euph.* The architects judge a door to be of a beautiful proportion, when its height is double of the breadth. But if you should invert a well-proportioned door, making its breadth become the height, and its height the breadth, the figure would still be the same, but without that beauty in one situation which it had in another. What can be the cause of this, but that in the forementioned supposition, the door would not yield a convenient entrances to creatures of a human figure? But if, in any other part of the universe, there should be supposed rational animals of an inverted stature, they must be supposed to invert the rule for proportion of doors; and to them that would appear beautiful which to us was disagreeable. *Alc.* Against this I have no objection. *Euph.* Tell me, Alciphron, is there not something truly decent and beautiful in dress? *Alc.* Doubtless, there is. *Euph.* Are any likelier to give us an idea of this beauty in dress than painters and sculptors, whose proper business and study it is to aim at graceful representations? *Alc.* I believe not. *Euph.* Let us then examine the draperies of the great masters in these arts: how, for instance, they use to clothe a matron or a man of rank. Cast an eye on those figures, said he (pointing to some prints after Raphael and Guido, that hung upon the wall), what appearance, do you think, an English courtier or magistrate, with his Gothic, suc-

Digitized by Google

cinct, plaited garment, and his full-bottomed wig, or one of our ladies in her unnatural dress pinched and stiffened and enlarged, with hoops and whale-bone and buckram, must make, among those figures so decently clad in draperies that fall into such a variety of natural, easy, and ample folds, that appear with so much dignity and simplicity, that cover the body without encumbering it, and adorn without altering the shape? *Alc.* Truly I think they must make a very ridiculous appearance. *Euph.* And what do you think this proceeds from? Whence is it that the eastern nations, the Greeks and the Romans, naturally ran into the most becoming dresses, while our Gothic gentry, after so many centuries racking their inventions, mending, and altering, and improving, and whirling about in a perpetual rotation of fashions, have never yet had the luck to stumble on any that was not absurd and ridiculous? Is it not from hence, that instead of consulting use, reason, and convenience, they abandon themselves to irregular fancy, the unnatural parent of monsters? Whereas the ancients, considering the use and end of dress, made it subservient to the freedom, ease, and convenience, of the body; and, having no notion of mending or changing the natural shape, they aimed only at shewing it with decency and advantage. And, if this be so, are we not to conclude, that the beauty of dress depends on its subserviency to certain ends and uses? *Alc.* This appears to be true. *Euph.* This subordinate relative nature of beauty, perhaps, will be yet plainer, if we examine the respective beauties of a horse and a pillar. Virgil's description of the former is,

> Illi ardua cervix,
> Argutumque caput, brevis alvus, obesaque terga,
> Luxuriatque toris animosum pectus.

Now I would fain know, whether the perfections and uses of a horse may not be reduced to these three points, courage, strength, and speed; and whether each of the

beauties enumerated doth not occasion or betoken one of these perfections? After the same manner, if we inquire into the parts and proportions of a beautiful pillar, we shall perhaps find them answer to the same idea. Those who have considered the theory of architecture tell us,* the proportions of the three Grecian orders were taken from the human body, as the most beautiful and perfect production of nature. Hence were derived those graceful ideas of columns, which had a character of strength without clumsiness, or of delicacy without weakness. Those beautiful proportions were, I say, taken originally from nature, which, in her creatures, as hath been already observed, referreth them to some end, use, or design. The *gonfiezza* also, or swelling, and the diminution of a pillar, is it not in such proportion as to make it appear strong and light at the same time? In the same manner must not the whole entablature, with its projections, be so proportioned, as to seem great but not heavy, light but not little, inasmuch as a deviation into either extreme would thwart that reason and use of things wherein their beauty is founded, and to which it is subordinate? The entablature and all its parts and ornaments, architrave, freeze, cornice, triglyphs, metopes, modiglions, and the rest, have each a use or appearance of use, in giving firmness and union to the building, in protecting it from the weather, and casting off the rain, in representing the ends of beams with their intervals, the production of rafters, and so forth. And if we consider the graceful angles in frontispieces, the spaces between the columns, or the ornaments of their capitals, shall we not find, that their beauty riseth from the appearance of use, or the imitation of natural things, whose beauty is originally founded on the same principle? which is, indeed, the grand distinction between Grecian and Gothic

* See the learned Patriarch of Aquileia's Commentary on Vitruvius, lib. iv. cap. i.

Digitized by Google

architecture, the latter being fantastical, and for the most part founded neither in nature nor in reason, in necessity nor use, the appearance of which accounts for all the beauty, grace, and ornament, of the other. *Cri.* What Euphranor has said confirms the opinion I always entertained, that the rules of architecture were founded, as all other arts which flourished among the Greeks, in truth, and nature, and good sense. But the ancients, who, from a thorough consideration of the grounds and principles of art, formed their idea of beauty, did not always confine themselves strictly to the same rules and proportions: but, whenever the particular distance, position, elevation, or dimension, of the fabric or its parts seemed to require it, made no scruple to depart from them, without deserting the original principles of beauty, which governed whatever deviations they made. This latitude or licence might not, perhaps, be safely trusted with most modern architects, who in their bold sallies seem to act without aim or design, and to be governed by no idea, no reason, or principle of art, but pure caprice, joined with a thorough contempt of that noble simplicity of the ancients, without which there can be no unity, gracefulness, or grandeur, in their works; which of consequence must serve only to disfigure and dishonour the nation, being so many monuments to future ages of the opulence and ill taste of the present; which, it is to be feared, would succeed as wretchedly, and make as mad work in other affairs, were men to follow, instead of rules, precepts and models, their own taste and first thoughts of beauty. *Alc.* I should now, methinks, be glad to see a little more distinctly the use and tendency of this digression upon architecture. *Euph.* Was not beauty the very thing we inquired after? *Alc.* It was. *Euph.* What think you, Alciphron, can the appearance of a thing please at this time, and in this place, which pleased two thousand years ago, and two thousand miles off, without some real principle of beauty? *Alc.* It

Digitized by Google

cannot. *Euph.* And is not this the case with respect to a just piece of architecture? *Ale.* Nobody denies it. *Euph.* Architecture, the noble offspring of judgment and fancy, was gradually formed in the most polite and knowing countries of Asia, Egypt, Greece, and Italy. It was cherished and esteemed by the most flourishing states, and most renowned princes, who with vast expense improved and brought it to perfection. It seems, above all other arts, peculiarly conversant about order, proportion, and symmetry. May it not therefore be supposed, on all accounts, most likely to help us to some rational notion of the *je ne sçai quoi* in beauty? And, in effect, have we not learned from this digression, that as there is no beauty without proportion, so proportions are to be esteeemed just and true only as they are relative to some certain use or end, their aptitude and subordination to which end is, at bottom, that which makes them please and charm? *Alc.* I admit all this to be true.

X. *Euph.* According to this doctrine, I would fain know what beauty can be found in a moral system, formed, connected, and governed by chance, fate, or any other blind unthinking principle; forasmuch as without thought there can be no end or design, and without an end there can be no use, and without use there is no aptitude or fitness of proportion, from whence beauty springs? *Alc.* May we not suppose a certain vital principle of beauty, order, and harmony, diffused throughout the world, without supposing a Providence inspecting, punishing, and rewarding, the moral actions of men? Without supposing the immortality of the soul, or a life to come, in a word, without admitting any part of what is commonly called faith, worship, and religion? *Cri.* Either you suppose this principle intelligent, or not intelligent: if the latter, it is all one with chance or fate which was just now argued against: if the former, let me entreat Alciphron to explain to me, wherein con-

Digitized by Google

sists the beauty of a moral system, with a supreme intelligence at the head of it, which neither protects the innocent, punishes the wicked, nor rewards the virtuous? To suppose indeed a society of rational agents acting under the eye of Providence, concurring in one design to promote the common benefit of the whole, and conforming their actions to the established laws and order of the Divine parental wisdom: wherein each particular agent shall not consider himself apart, but as the member of a great city, whose author and founder is God: in which the civil laws are no other than the rules of virtue and the duties of religion: and where every one's true interest is combined with his duty: to suppose this would be delightful: on this supposition a man need be no Stoic or knight-errant, to account for his virtue. In such a system vice is madness, cunning is folly, wisdom and virtue are the same thing; where notwithstanding all the crooked paths and by-roads, the wayward appetites and inclinations of men, sovereign reason is sure to reform whatever seems amiss, to reduce that which is devious, make straight that which is crooked, and in the last act wind up the whole plot, according to the exactest rules of wisdom and justice. In such a system or society, governed by the wisest precepts, enforced by the highest rewards and discouragements, it is delightful to consider, how the regulation of laws, the distribution of good and evil, the aim of moral agents, do all conspire in due subordination to promote the noblest end, to wit, the complete happiness or well-being of the whole. In contemplating the beauty of such a moral system, we may cry out with the Psalmist, "Very excellent things are spoken of thee, thou city of God."

XI. In a system of spirits, subordinate to the will, and under the direction, of the Father of spirits, governing them by laws, and conducting them by methods suitable to wise and good ends, there will be great beauty. But in an incoherent fortuitous system governed

Digitized by Google

by chance, or in a blind system governed by fate, or in any system where Providence doth not preside, how can beauty be, which cannot be without order, which cannot be without design? When a man is conscious that his will is inwardly conformed to the Divine will, producing order and harmony in the universe, and conducting the whole by the justest methods to the best end: this gives a beautiful idea. But on the other hand, a consciousness of virtue overlooked, neglected, distressed by men, and not regarded or rewarded by God, ill used in this world, without hope or prospect of being better used in another, I would fain know, where is the pleasure of this reflection, where is the beauty of this scene? Or how could any man, in his senses, think the spreading such notions the way to spread or propagate virtue in the world? Is it not, I beseech you, an ugly system in which you can suppose no law and prove no duty, wherein men thrive by wickedness and suffer by virtue? Would it not be a disagreeable sight to see an honest man peeled by sharpers, to see virtuous men injured and despised while vice triumphed? An enthusiast may entertain himself with visions and fine talk about such a system; but when it comes to be considered by men of cool heads and close reason, I believe they will find no beauty nor perfection in it; nor will it appear, that such a moral system can possibly come from the same hand, or be of a piece with the natural, throughout which there shine so much order, harmony, and proportion. *Alc.* Your discourse serves to confirm me in my opinion. You may remember, I declared, that touching this beauty of morality in the high sense, a man's first thoughts are the best; and that, if we pretend to examine, inspect, and reason, we are in danger to lose sight of it. That in fact there is such a thing cannot be doubted, when we consider that in these days some of our philosophers have a high sense of virtue, without the least notion of religion, a

Digitized by Google

clear proof of the usefulness and efficacy of our principles!

XII. *Cri.* Not to dispute the virtue of minute philosophers, we may venture to call its cause in question, and make a doubt, whether it be an inexplicable enthusiastic notion of moral beauty, or rather, as to me it seems, what was already assigned by Euphranor, complexion, custom, and religious education? But, allowing what beauty you please to virtue in an irreligious system, it cannot be less in a religious, unless you will suppose that her charms diminish as her dowry increaseth. The truth is, a believer hath all the motives from the beauty of virtue in any sense whatsoever that an unbeliever can possibly have, besides other motives which an unbeliever hath not. Hence it is plain, those of your sect, who have moral virtue, owe it not to their peculiar tenets, which serve only to lessen the motives to virtue. Those therefore, who are good, are less good, and those who are bad are more bad, than they would have been were they believers. *Euph.* To me it seems those heroic infidel inamoratos of abstracted beauty are much to be pitied, and much to be admired. Lysicles hearing this, said with some impatience, Gentlemen, you shall have my whole thoughts upon this point plain and frank. All that is said about a moral sense, or moral beauty, in any signification, either of Alciphron or Euphranor, or any other, I take to be at bottom mere bubble and pretence. The καλὸν and the πρέπον, the *beautiful* and *decent*, are things outward, relative, and superficial, which have no effect in the dark, but are specious topics to discourse and expatiate upon, as some formal pretenders of our sect, though in other points very orthodox, are used to do. But should one of them get into power, you would find him no such fool as Euphranor imagines. He would soon shew he had found out that the love of one's country is a prejudice: that mankind are rogues and hypocrites, and that it were

Digitized by Google

folly to sacrifice one's self for the sake of such: that all regards centre in this life, and that, as this life is to every man his own life, it clearly follows, that charity begins at home. Benevolence to mankind is perhaps pretended, but benevolence to himself is practised by the wise. The livelier sort of our philosophers do not scruple to own these maxims; and as for the graver, if they are true to their principles, one may guess what they must think at the bottom. *Cri.* Whatever may be the effect of pure theory upon certain select spirits, of a peculiar make, or in some other parts of the world, I do verily think that in this country of ours, reason, religion, and law, are all together little enough to subdue the outward to the inner man; and that it must argue a wrong head and weak judgment to suppose, that without them men will be enamoured of the golden mean. To which my countrymen perhaps are less inclined than others, there being in the make of an English mind a certain gloom and eagerness, which carries to the said extreme; religion to fanaticism; free-thinking to atheism; liberty to rebellion: nor should we venture to be governed by taste, even in matters of less consequence. The beautiful in dress, furniture, and building, is, as Euphranor hath observed, something real and well grounded: and yet our English do not find it out of themselves. What wretched work do they and other northern people make, when they follow their own taste of beauty in any of these particulars, instead of acquiring the true, which is to be got from ancient models and the principles of art, as in the case of virtue from great models and meditation, so far as natural means can go? But in no case is it to be hoped, that τὸ καλὸν will be the leading idea of the many, who have quick senses, strong passions, and gross intellects.

XIII. *Alc.* The fewer they are, the more ought we to esteem and admire such philosophers, whose souls are touched and transported with this sublime idea.

Digitized by Google

Cri. But then one might expect from such philosophers so much good sense and philanthropy, as to keep their tenets to themselves, and consider their weak brethren, who are more strongly affected by certain senses and notions of another kind, than that of the beauty of pure disinterested virtue. Cratylus, a man prejudiced against the Christian religion, of a crazy constitution, of a rank above most men's ambition, and a fortune equal to his rank, had little capacity for sensual vices, or temptation to dishonest ones. Cratylus having talked himself, or imagined that he had talked himself, into a stoical enthusiasm about the beauty of virtue, did, under the pretence of making men heroically virtuous, endeavour to destroy the means of making them reasonably and humanly so: a clear instance, that neither birth, nor books, nor conversation, can introduce a knowledge of the world into a conceited mind, which will ever be its own object, and contemplate mankind in its own mirror! *Alc.* Cratylus was a lover of liberty, and of his country, and had a mind to make men incorrupt and virtuous upon the purest and most disinterested principles. *Cri.* His conduct seems just as wise as if a monarch should give out, that there was neither jail nor executioner in his kingdom to enforce the laws, but that it would be beautiful to observe them, and that in so doing men would taste the pure delight which results from order and decorum. *Alc.* After all, is it not true that certain ancient philosophers, of great note, held the same opinion with Cratylus, declaring, that he did not come up to the character, or deserve the title, of a good man who practised virtue for the sake of any thing but its own beauty? *Cri.* I believe, indeed, that some of the ancients said such things as gave occasion for this opinion. Aristotle* distinguisheth between two characters of a good man, the one he calleth ἀγαθὸς, or simply *good*, the other καλὸς κἀγαθος, from whence the compound term

* Ethic. ad Eudemum, lib. vii. cap. ult.

Digitized by Google

καγοκἀγαθία, which cannot, perhaps, be rendered by any one word in our language. But his sense is plainly this: ἀγαθὸς he defineth to be, *that man to whom the good things of nature are good*; for, according to him, those things which are vulgarly esteemed the greatest goods, as riches, honours, power, and bodily perfections, are indeed good by nature, but they happen nevertheless to be hurtful and bad to some persons, upon the account of evil habits: inasmuch as neither a fool, nor an unjust man, nor an intemperate, can be at all the better for the use of them, any more than a sick man for using the nourishment proper for those who are in health. But καλὸς κἀγαθὸς is that man in whom are to be found all things worthy and decent and laudable, purely as such, and for their own sake, and who practiseth virtue from no other motive than the sole love of her own innate beauty. That philosopher observes likewise, that there is a certain political habit, such as the Spartans and others had, who thought virtue was to be valued and practised on account of the natural advantages that attend it. For which reason he adds, they are indeed good men, but they have not the καλοκἀγαθία, or supreme consummate virtue. From hence it is plain that, according to Aristotle, a man may be a good man without believing virtue its own reward, or being only moved to virtue by the sense of moral beauty. It is also plain, that he distinguisheth the political virtues of nations, which the public is every where concerned to maintain, from this sublime and speculative kind. It might also be observed, that his exalted idea did consist with supposing a Providence which inspects and rewards the virtues of the best men. For, saith he in another place,* If the gods have any care of human affairs, as it appears they have, it should seem reasonable to suppose, they are most delighted with the most excellent nature, and most approaching their own, which is the mind, and that they

* Ad Nicom. lib. x. cap. viii.

Digitized by Google

will reward those who chiefly love and cultivate what is most dear to them. The same philosopher observes,* that the bulk of mankind are not naturally disposed to be awed by shame, but by fear; nor to abstain from vicious practices, on account of their deformity, but only of the punishment which attends them. And again,† he tells us that youth, being of itself averse from abstinence and sobriety, should be under the restraint of laws regulating their education and employment, and that the same discipline should be continued even after they became men. For which, saith he, we want laws, and in one word, for the whole ordering of life, inasmuch as the generality of mankind obey rather force than reason, and are influenced rather by penalties than the beauty of virtue; ζημίαις ἢ τῶ καλῷ. From all which it is very plain, what Aristotle would have thought of those, who should go about to lessen or destroy the hopes and fears of mankind, in order to make them virtuous on this sole principle of the beauty of virtue.

Alc. But whatever the Stagirite and his Peripatetics might think, it is not certain that the Stoics maintained this doctrine in its highest sense, asserting the beauty of virtue to be all-sufficient, that virtue was her own reward, that this alone could make a man happy, in spite of all those things which are vulgarly esteemed the greatest woes and miseries of human life? And all this they held at the same time that they believed the soul of man to be of a corporeal nature, and in death dissipated like a flame or vapour. *Cri.* It must be owned, the Stoics sometimes talk as if they believed the mortality of the soul. Seneca, in a letter of his to Lucilius, speaks much like a minute philosopher in this particular. But in several other places he declares himself of a clear contrary opinion, affirming that the souls of men after death mount aloft into the heavens, look down upon earth, entertain themselves with the theory of celestial

* Ad Nicom. cap. ix. † Ibid.

Digitized by Google

bodies, the course of nature, and the conversation of wise and excellent men, who, having lived in distant ages and countries upon earth, make one society in the other world. It must also be acknowledged, that Marcus Antoninus sometimes speaks of the soul as perishing, or dissolving into its elementary parts: but it is to be noted, that he distinguisheth three principles in the composition of human nature, the σῶμα, ψυχή, νοῦς,* *body, soul, mind*, or as he otherwise expresseth himself, σαρκία, πνευμάτιον, and ἡγεμονικὸν, *flesh, spirit*, and *governing principle*. What he calls the ψυχή, or *soul*, containing the brutal part of our nature, is indeed represented as a compound dissoluble, and actually dissolved by death: but the νοῦς or τὸ ἡγεμονικὸν, the *mind* or *ruling principle*, he held to be of a pure celestial nature, θεοῦ ἀπόσπασμα, a *particle of God*, which he sends back entire to the stars and the Divinity. Besides, among all his magnificent lessons and splendid sentiments upon the force and beauty of virtue, he is positive as to the being of God, and that not merely as a plastic nature, or soul of the world, but in the strict sense of a Providence inspecting and taking care of human affairs.† The Stoics therefore, though their style was high, and often above truth and nature, yet it cannot be said that they so resolved every motive to a virtuous life into the sole beauty of virtue, as to endeavour to destroy the belief of the immortality of the soul and a distributive Providence. After all, allowing the disinterested Stoics (therein not unlike our modern quietists) to have made virtue its own sole reward, in the most rigid and absolute sense, yet what is this to those who are no Stoics? If we adopt the whole principles of that sect, admitting their notions of good and evil, their celebrated apathy, and, in one word, setting up for complete Stoics, we may possibly maintain this doctrine with a better grace; at least it will be of a piece and consistent with the whole. But he who shall borrow this

* Lib. iii. cap. xvi. † Marc. Antonin. lib. ii. §. 11.

Digitized by Google

splendid patch from the Stoics, and hope to make a figure by inserting it into a piece of modern composition, seasoned with the wit and notions of these times, will indeed make a figure, but perhaps it may not be in the eyes of a wise man the figure he intended.

XV. Though it must be owned, the present age is very indulgent to every thing that aims at profane raillery; which is alone sufficient to recommend any fantastical composition to the public. You may behold the tinsel of a modern author pass upon this knowing and learned age for good writing; affected strains for wit; pedantry for politeness; obscurity for depths; ramblings for flights; the most awkward imitation for original humour; and all this upon the sole merit of a little artful profaneness. *Alc.* Every one is not alike pleased with writings of humour, nor alike capable of them. It is the fine irony of a man of quality, "that certain reverend authors, who can condescend to lay-wit, are nicely qualified to hit the air of breeding and gentility, and that they will in time, no doubt, refine their manner to the edification of the polite world; who have been so long seduced by the way of raillery and wit." The truth is, the various taste of readers requireth various kinds of writers. Our sect hath provided for this with great judgment. To proselyte the graver sort we have certain profound men at reason and argument. For the coffee-houses and populace we have declaimers of a copious vein. Of such a writer it is no reproach to say, *fluit lutulentus*; he is the fitter for his readers. Then, for men of rank and politeness, we have the finest and wittest *railleurs* in the world, whose ridicule is the surest test of truth. *Euph.* Tell me, Alciphron, are those ingenious *railleurs* men of knowledge? *Alc.* Very knowing. *Euph.* Do they know, for instance, the Copernican system, or the circulation of the blood? *Alc.* One would think you judged of our sect by your country neighbours: there is nobody in town but knows all those

Digitized by Google

points. *Euph.* You believe then antipodes, mountains in the moon, and the motion of the earth? *Alc.* We do. *Euph.* Suppose, five or six centuries ago, a man had maintained these notions among the *beau esprits* of an English court; how do you think they would have been received? *Alc.* With great ridicule. *Euph.* And now it would be ridiculous to ridicule them? *Alc.* It would. *Euph.* But truth was the same then and now. *Alc.* It was. *Euph.* It should seem, therefore, that ridicule is no such sovereign touchstone and test of truth as you gentleman imagine. *Alc.* One thing we know: our raillery and sarcasms gall the black tribe, and that is our comfort. *Cri.* There is another thing it may be worth your while to know: that men in a laughing fit may applaud a ridicule, which shall appear contemptible when they come to themselves; witness the ridicule of Socrates by the comic poet, the humour and reception it met with no more proving that, than the same will yours to be just, when calmly considered by men of sense. *Alc.* After all, thus much is certain, our ingenious men make converts by deriding the principles of religion. And, take my word, it is the most successful and pleasing method of conviction. These authors laugh men out of their religion, as Horace did out of their vices; *Admissi circum præcordia ludunt.* But a bigot cannot relish or find out their wit.

XVI. *Cri.* Wit without wisdom, if there be such a thing, is hardly worth finding. And as for the wisdom of these men, it is of a kind so peculiar, one may well suspect it. Cicero was a man of sense, and no bigot, nevertheless he makes Scipio own himself much more vigilant and vigorous in the race of virtue, from supposing heaven the prize.* And he introduceth Cato, declaring he would never have undergone those virtuous toils for the service of the public, if he had thought his being was to end with this life.† *Alc.* I acknowledge Cato, Scipio,

*Somn. Scipionis. † De Senectute.

Digitized by Google

and Cicero, were very well for their times, but you must pardon me, if I do not think they arrived at the high consummate virtue of our modern free-thinkers. *Euph.* It should seem then that virtue flourisheth more than ever among us? *Alc.* It should. *Euph.* And this abundant virtue is owing to the method taken by your profound writers to recommend it? *Alc.* This I grant. *Euph.* But you have acknowledged, that the enthusiastic lovers of virtue are not the many of your sect, but only a few select spirits. To which Alciphron making no answer, Crito addressed himself to Euphranor: To make, said he, a true estimate of the worth and growth of modern virtue, you are not to count the virtuous men, but rather to consider the quality of their virtue. Now you must know, the virtue of these refined theorists is something so pure and genuine, that a very little goes far, and is in truth invaluable. To which that reasonable interested virtue of the old English or Spartan kind can bear no proportion. *Euph.* Tell me, Alciphron, are there not diseases of the soul as well as of the body? *Alc.* Without doubt. *Euph.* And are not those diseases vicious habits? *Alc.* They are. *Euph.* And, as bodily distempers are cured by physic, those of the mind are cured by philosophy; are they not? *Alc.* I acknowledge it. *Euph.* It seems therefore, that philosophy is a medicine for the soul of man. *Alc.* It is. *Euph.* How shall we be able to judge of medicines, or know which to prefer? Is it not from the effects wrought by them? *Alc.* Doubtless. *Euph.* Where an epidemical distemper rages, suppose a new physician should condemn the known established practice, and recommend another method of cure, would you not, in proportion as the bills of mortality increased, be tempted to suspect this new method, notwithstanding all the plausible discourse of its abettors? *Alc.* This serves only to amuse and lead us from the question. *Cri.* It puts me in mind of my friend Lamprocles, who needed but one argument against in-

Digitized by Google

fidels. I observed, said he, that as infidelity grew, there grew corruption of every kind, and new vices. This simple observation on matter of fact was sufficient to make him, notwithstanding the remonstrance of several ingenious men, imbue and season the minds of his children betimes with the principles of religion. The new theories which our acute moderns have endeavoured to substitute in place of religion, have had their full course in the present age, and produced their effect on the minds and manners of men. That men are men is a sure maxim: but it is as sure that Englishmen are not the same men they were; whether better or worse, more or less virtuous, I need not say. Every one may see and judge. Though, indeed, after Aristides had been banished, and Socrates put to death at Athens, a man, without being a conjuror, might guess what the beauty of virtue could do in England. But there is now neither room nor occasion for guessing. We have our own experience to open our eyes; which yet if we continue to keep shut till the remains of religious education are quite worn off from the minds of men, it is to be feared we shall then open them wide, not to avoid, but to behold and lament our ruin. *Alc.* Be the consequences what they will, I can never bring myself to be of a mind with those who measure truth by convenience. Truth is the only divinity that I adore. Wherever truth leads I shall follow. *Euph.* You have then a passion for truth? *Alc.* Undoubtedly? *Euph.* For all truths? *Alc.* For all. *Euph.* To know or to publish them? *Alc.* Both. *Euph.* What! would you undeceive a child that was taking physic? Would you officiously set an enemy right that was making a wrong attack? Would you help an enraged man to his sword? *Alc.* In such cases, common sense directs one how to behave. *Euph.* Common sense, it seems then, must be consulted whether a truth be salutary or hurtful, fit to be declared or concealed. *Alc.* How! you would have me conceal and stifle the truth,

Digitized by Google

and keep it to myself. Is this what you aim at? *Euph.* I only make a plain inference from what you grant. As for myself, I do not believe your opinions true. And although you do, you should not therefore, if you would appear consistent with yourself, think it necessary or wise to publish hurtful truths. What service can it do mankind to lessen the motives to virtue, or what damage to increase them? *Alc.* None in the world. But I must needs say, I cannot reconcile the received notions of a God and Providence to my understanding, and my nature abhors the baseness of conniving at a falsehood. *Euph.* Shall we therefore appeal to truth, and examine the reasons by which you are withheld from believing these points? *Alc.* With all my heart; but enough for the present. We will make this the subject of our next conference.

Digitized by Google

THE FOURTH DIALOGUE.

I. Prejudices concerning a Deity. II. Rules laid down by Alciphron to be observed in proving a God. III. What sort of proof he expects. IV. Whence we collect the being of other thinking individuals. V. The same method *a fortiori* proves the being of God. VI. Alciphron's second thoughts on this point. VII. God speaks to men. VIII. How distance is perceived by sight. IX. The proper objects of sight at no distance. X Lights, shades, and colours, variously combined, form a language. XI. The signification of this language learned by experience. XII. God explaineth himself to the eyes of men by the arbitrary use of sensible signs. XIII. The prejudice and two-fold aspect of a minute philosopher. XIV. God present to mankind, informs, admonishes, and directs, them in a sensible manner. XV. Admirable nature and use of this visual language. XVI. Minute philosophers content to admit a God in certain senses. XVII. Opinion of some who hold, that knowledge and wisdom are not properly in God. XVIII. Dangerous tendency of this notion. XIX. Its original. XX. The sense of schoolmen upon it. XXI. Scholastic use of the terms analogy and analogical explained: analogical perfections of God misunderstood. XXII. God intelligent, wise, and good, in the proper sense of the words. XXIII. Objection from moral evil considered. XXIV. Men argue from their own defects against a Deity. XXV. Religious worship reasonable and expedient.

I. Early the next morning, as I looked out of my window, I saw Alciphron walking in the garden with all the signs of a man in deep thought. Upon which I went down to him. Alciphron, said I, this early and profound meditation puts me in no small fright. How so? Because I should be sorry to be convinced there was no God. The thought of anarchy in nature is to me more shocking than in civil life: inasmuch as natural concerns are more important than civil, and the basis of all others. I grant, replied Alciphron, that some inconvenience may possibly follow from disproving a God: but as to what you say of fright and shocking, all that is nothing but mere prejudice. Men frame an idea or chi-

Digitized by Google

mera in their own minds, and then fall down and worship it. Notions govern mankind; but of all notions, that of God's governing the world hath taken the deepest root and spread the farthest: it is therefore in philosophy an heroical achievement to dispossess this imaginary monarch of his government, and banish all those fears and spectres which the light of reason alone can dispel;

> Non radii solis, non lucida tela diei
> Discutiunt, sed naturæ species ratioque.*

My part, said I, shall be to stand by, as I have hitherto done, and take notes of all that passeth during this memorable event, while a minute philosopher not six feet high attempts to dethrone the monarch of the universe. Alas! replied Alciphron, arguments are not to be measured by feet and inches. One man may see more than a million; and a short argument, managed by a free-thinker, may be sufficient to overthrow the most gigantic chimera. As we were engaged in this discourse, Crito and Euphranor joined us. I find you have been beforehand with us to day, said Crito to Alciphron, and taken the advantage of solitude and early hours, while Euphranor and I were asleep in our beds. We may therefore expect to see atheism placed in the best light, and supported by the strongest arguments.

II. *Alc.* The being of a God is a subject upon which there has been a world of common-place, which it is needless to repeat. Give me leave therefore to lay down certain rules and limitations, in order to shorten our present conference. For as the end of debating is to persuade, all those things which are foreign to this end should be left out of our debate. First then let me tell you, I am not to be persuaded by metaphysical arguments; such, for instance, as are drawn from the idea of an all perfect being, or the absurdity of an infinite progression of causes. This sort of arguments I have always found

* Lucretius.

Digitized by Google

dry and jejune; and, as they are not suited to my way of thinking, they may perhaps puzzle, but never will convince me. Secondly, I am not to be persuaded by the authority either of past or present ages, of mankind in general, or of particular wise men, all which passeth for little or nothing with a man of sound argument and free thought. Thirdly, all proofs drawn from utility or convenience are foreign to the purpose. They may prove indeed the usefulness of the notion, but not the existence of the thing. Whatever legislators or statesmen may think, truth and convenience are very different things to the rigorous eye of a philosopher. And now, that I may not seem partial, I will limit myself also not to object, in the first place, from any thing that may seem irregular or unaccountable in the works of nature, against a cause of infinite power and wisdom; because I already know the answer you will make, to wit, that no one can judge of the symmetry and use of the parts of an infinite machine, which are all relative to each other, and to the whole, without being able to comprehend the entire machine or the whole universe. And in the second place, I shall engage myself not to object against the justice and providence of a supreme being, from the evil that befals good men, and the prosperity which is often the portion of wicked men in this life; because I know that, instead of admitting this to be an objection against a Deity, you would make it an argument for a future state, in which there shall be such a retribution of rewards and punishments, as may vindicate the Divine attributes, and set all things right in the end. Now these answers, though they should be admitted for good ones, are in truth no proofs of the being of God, but only solutions of certain difficulties which might be objected, supposing it already proved by proper arguments. Thus much I thought fit to premise, in order to save time and trouble both to you and myself. *Cri.* I think that, as the proper end of our conference ought

Digitized by Google

to be supposed the discovery and defence of truth, so truth may be justified, not only by persuading its adversaries, but, where that cannot be done, by shewing them to be unreasonable. Arguments therefore, which carry light, have their effect, even against an opponent who shuts his eyes, because they shew him to be obstinate and prejudiced. Besides, this distinction between arguments that puzzle and that convince, is least of all observed by minute philosophers, and need not therefore be observed by others in their favour. But perhaps Euphranor may be willing to encounter you on your own terms, in which case I have nothing farther to say.

III. *Euph.* Alciphron acts like a skilful general, who is bent upon gaining the advantage of the ground, and alluring the enemy out of their trenches. We who believe a God, are intrenched within tradition, custom, authority, and law. And nevertheless, instead of attempting to force us, he proposes that we should voluntarily abandon these intrenchments, and make the attack, when we may act on the defensive with much security and ease, leaving him the trouble to dispossess us of what we need not resign. Those reasons (continued he, addressing himself to Alciphron) which you have mustered up in this morning's meditation, if they do not weaken, must establish our belief of a God; for the utmost is to be expected from so great a master in his profession, when he sets his strength to a point. *Alc.* I hold the confused notion of a *Deity* or some invisible power, to be of all prejudices the most unconquerable when half a dozen ingenious men are got together over a glass of wine, by a cheerful fire, in a room well lighted, we banish with ease all the spectres of fancy and education, and are very clear in our decisions. But, as I was taking a solitary walk before it was broad daylight in yonder grove, methought the point was not quite so clear; nor could I readily recollect the force of those arguments, which used to appear

Digitized by Google

so conclusive at other times. I had I know not what awe upon my mind, and seemed haunted by a sort of panic, which I cannot otherwise account for, than by supposing it the effect of prejudice: for you must know, that I, like the rest of the world, was once upon a time catechised and tutored into the belief of a God or Spirit. There is no surer mark of prejudice, than the believing a thing without reason. What necessity then can there be that I should set myself the difficult task of proving a negative, when it is sufficient to observe that there is no proof of the affirmative, and that the admitting it without proof is unreasonable? Prove therefore your opinion; or if you cannot, you may indeed remain in possession of it, but you will only be possessed of a prejudice. *Euph.* O Alciphron, to content you we must prove, it seems, and we must prove upon your own terms. But, in the first place, let us see what sort of proof you expect. *Alc.* Perhaps I may not expect it, but I will tell you what sort of proof I would have: and that is in short, such proof as every man of sense requires of a matter of fact, or the existence of any other particular thing. For instance, should a man ask why I believe there is a king of Great Britain? I might answer because I had seen him; or a king of Spain? Because I had seen those who saw him. But as for this King of kings, I neither saw him myself, nor any one else that ever did see him. Surely if there be such a thing as God, it is very strange that he should leave himself without a witness; that men should still dispute his being; and that there should be no one evident, sensible, plain proof of it, without recourse to philosophy or metaphysics. A matter of fact is not to be proved by notions, but by facts. This is clear and full to the point. You see what I would be at. Upon these principles I defy superstition. *Euph.* You believe then as far as you can see? *Alc.* That is my rule of faith. *Euph.* How! will you not believe the existence

Digitized by Google

of things which you hear, unless you also see them? *Alc.* I will not say so neither. When I insisted on seeing, I would be understood to mean perceiving in general: outward objects make very different impressions upon the animal spirits, all which are comprised under the common name of sense. And whatever we can perceive by any sense, we may be sure of.

IV. *Euph.* What! do you believe then there are such things as animal spirits? *Alc.* Doubtless. *Euph.* By what sense do you perceive them? *Alc.* I do not perceive them immediately by any of my senses. I am nevertheless persuaded of their existence, because I can collect it from their effects and operations. They are the messengers, which, running to and fro in the nerves, preserve a communication between the soul and outward objects. *Euph.* You admit then the being of a soul? *Alc.* Provided I do not admit an immaterial substance, I see no inconvenience in admitting there may be such a thing as a soul. And this may be no more than a thin fine texture of subtile parts or spirits residing in the brain. *Euph.* I do not ask about its nature. I only ask, whether you admit that there is a principle of thought and action, and whether it be perceivable by sense. *Alc.* I grant that there is such a principle, and that it is not the object of sense itself, but inferred from appearances which are perceived by sense. *Euph.* If I understand you rightly, from animal functions and motions you infer the existence of animal spirits, and from reasonable acts you infer the existence of a reasonable soul. Is it not so? *Alc.* It is. *Euph.* It should seem therefore, that the being of things imperceptible to sense may be collected from effects and signs, or sensible tokens. *Alc.* It may. *Euph.* Tell me, Alciphron, is not the soul that which makes the principal distinction between a real person and a shadow, a living man and a carcass? *Alc.* I grant it is. *Euph.* I cannot, therefore, know that you for instance are a

Digitized by Google

distinct thinking individual, or a living real man, by surer or other signs than those from which it can be inferred that you have a soul. *Alc.* You cannot. *Euph.* Pray tell me, are not all acts immediately and properly perceived by sense reducible to motion? *Alc.* They are. *Euph.* From motions therefore you infer a mover or cause; and from reasonable motions (or such as appear calculated for a reasonable end) a rational cause, soul, or spirit? *Alc.* Even so.

V. *Euph.* The soul of man actuates but a small body, an insignificant particle, in respect of the great masses of nature, the elements, and heavenly bodies, and system of the world. And the wisdom that appears in those motions, which are the effect of human reason, is incomparably less than that which discovers itself in the structure and use of organized natural bodies, animal or vegetable. A man with his hand can make no machine so admirable as the hand itself: nor can any of those motions, by which we trace out human reason, approach the skill and contrivance of those wonderful motions of the heart, and brain, and other vital parts, which do not depend on the will of man. *Alc.* All this is true. *Euph.* Doth it not follow then that from natural motions, independent of man's will, may be inferred both power and wisdom incomparably greater than that of the human soul? *Alc.* It should seem so. *Euph.* Further, is there not in natural productions and effects a visible unity of counsel and design? Are not the rules fixed and immoveable? Do not the same laws of motion obtain throughout? The same in China and here, the same 2,000 years ago and at this day? *Alc.* All this I do not deny. *Euph.* Is there not also a connexion or relation between animals and vegetables, between both and the elements, between the elements and heavenly bodies; so that from their mutual respects, influences, subordinations, and uses, they may be collected to be parts of one whole, conspiring to one and the same end, and ful-

Digitized by Google

filling the same design? *Alc.* Supposing all this to be true? *Euph.* Will it not then follow, that this vastly great or infinite power and wisdom must be supposed in one and the same agent, spirit, or mind; and that we have at least, as clear, full, and immediate, certainty of the being of this infinitely wise and powerful Spirit, as of any one human soul whatsoever besides our own? *Alc.* Let me consider; I suspect we proceed too hastily. What! do you pretend you can have the same assurance of the being of a God, that you can have of mine, whom you actually see stand before you and talk to you? *Euph.* The very same, if not greater. *Alc.* How do you make this appear? *Euph.* By the person Alciphron is meant an individual thinking thing, and not the hair, skin, or visible surface, or any part of the outward form, colour, or shape, of Alciphron. *Alc.* This I grant. *Euph.* And in granting this, you grant that, in a strict sense, I do not see Alciphron, i. e. that individual thinking thing, but only such visible signs and tokens, as suggest and infer the being of that invisible thinking principle or soul. Even so, in the self-same manner, it seems to me, that though I cannot with eyes of flesh behold the invisible God, yet I do in the strictest sense behold and perceive by all my senses such signs and tokens, such effects and operations, as suggest, indicate, and demonstrate, an invisible God, as certainly and with the same evidence, at least, as any other signs, perceived by sense, do suggest to me the existence of your soul, spirit, or thinking principle; which I am convinced of only by a few signs or effects, and the motions of one small organized body: whereas I do, at all times and in all places, perceive sensible signs, which evince the being of God. The point, therefore, doubted or denied by you at the beginning, now seems manifestly to follow from the premises. Throughout this whole inquiry, have we not considered every step with care, and made not the least advance without clear evidence? You and

Digitized by Google

I examined and assented singly to each foregoing proposition: what shall we do then with the conclusion? For my part, if you do not help me out, I find myself under an absolute necessity of admitting it for true. You must therefore be content henceforward to bear the blame, if I live and die in the belief of a God.

VI. *Alc.* It must be confessed, I do not readily find an answer. There seems to be some foundation for what you say. But on the other hand, if the point was so clear as you pretend, I cannot conceive how so many sagacious men of our sect should be so much in the dark, as not to know or believe one syllable of it. *Euph.* O Alciphron, it is not our present business to account for the oversights, or vindicate the honour, of those great men the free-thinkers, when their very existence is in danger of being called in question. *Alc.* How so? *Euph.* Be pleased to recollect the concessions you have made, and then shew me, if the arguments for a Deity be not conclusive, by what better argument you can prove the existence of that thinking thing, which in strictness constitutes the free-thinker. As soon as Euphranor had uttered these words, Alciphron stopped short, and stood in a posture of meditation, while the rest of us continued our walk, and took two or three turns; after which he joined us again with a smiling countenance, like one who had made some discovery. I have found, said he, what may clear up the point in dispute, and give Euphranor entire satisfaction; I would say an argument which will prove the existence of a free-thinker, the like whereof cannot be applied to prove the existence of a God. You must know then, that your notion of our perceiving the existence of God, as certainly and immediately as we do that of a human person, I could by no means digest, though I must own it puzzled me, till I had considered the matter. At first methought a particular structure, shape, or motion, was the most certain proof of a thinking reasonable soul. But a little attention satisfied me that these things have no necessary connexion with

Digitized by Google

reason, knowledge, and wisdom; and that allowing them to be certain proofs of a living soul, they cannot be so of a thinking and reasonable one. Upon secondthoughts, therefore, and a minute examination of this point, I have found, that nothing so much convinces me of the existence of another person as his speaking to me. It is my hearing you talk that, in strict and philosophical truth, is to me the best argument for your being. And this is a peculiar argument inapplicable to your purpose; for you will not, I suppose, pretend that God speaks to man in the same clear and sensible manner as one man doth to another?

VII. *Euph.* How! is then the impression of sound so much more evident than that of other senses? Or, if it be, is the voice of man louder than that of thunder? *Alc.* Alas! you mistake the point. What I mean is not the sound of speech merely as such, but the arbitrary use of sensible signs, which have no similitude or necessary connexion with the things signified, so as by the apposite managemant of them to suggest and exhibit to my mind an endless variety of things, differing in nature, time, and place, thereby informing me, entertaining me, and directing me how to act, not only with regard to things near and present, but also with regard to things distant and future. No matter whether these signs are pronounced or written; whether they enter by the eye or ear: they have the same use, and are equally proofs of an intellegent, thinking, designing cause. *Euph.* But what if it should appear that God really speaks to man; would this content you? *Alc.* I am for admitting no inward speech, no holy instincts, or suggestions of light or spirit. All that, you must know, passeth with men of sense for nothing. If you do not make it plain to me, that God speaks to men by outward sensible signs, of such sort and in such manner as I have defined, you do nothing. *Euph.* But if it shall appear plainly, that God speaks to men, by the intervention and use of arbitrary, outward, sensible signs, having no resemblance

Digitized by Google

or necessary connexion with the things they stand for and suggest: if it shall appear, that by innumerable combinations of these signs, an endless variety of things is discovered and made known to us; and that we are thereby instructed or informed in their different natures; that we are taught and admonished what to shun, and what to pursue; and are directed how to regulate our motions, and how to act with respect to things distant from us, as well in time as place; will this content you? *Alc.* It is the very thing I would have you make out; for therein consists the force, and use, and nature, of language.

VIII. *Euph.* Look, Alciphron, do you not see the castle upon yonder hill? *Alc.* I do. *Euph.* Is it not at a great distance from you? *Alc.* It is. *Euph.* Tell me, Alciphron, is not distance a line turned end-wise to the eye? *Alc.* Doubtless. *Euph.* And can a line, in that situation, project more than one single point on the bottom of the eye? *Alc.* It cannot. *Euph.* Therefore the appearance of a long and of a short distance is of the same magnitude, or rather of no magnitude at all, being in all cases one single point. *Alc.* It seems so. *Euph.* Should it not follow from hence, that distance is not immediately perceived by the eye? *Alc.* It should. *Euph.* Must it not then be perceived by the mediation of some other thing? *Alc.* It must. *Euph.* To discover what this is, let us examine what alteration there may be in the appearance of the same object, placed at different distances from the eye. Now I find by experience that when an object is removed still farther and farther off in a direct line from the eye, its visible appearance stills grows lesser and fainter, and this change of appearance being proportional and universal, seems to me to be that by which we apprehend the various degrees of distance. *Alc.* I have nothing to object to this. *Euph.* But littleness or faintness, in their own nature, seem to have no necessary connexion with greater length of distance? *Alc.* I ad-

Digitized by Google

mit this to be true. *Euph.* Will it not follow then, that they could never suggest it but from experience? *Alc.* It will. *Euph.* That is to say, we perceive distance, not immediately, but by mediation of a sign, which hath no likeness to it, or necessary connexion with it, but only suggests it from repeated experience as words do things. *Alc.* Hold, Euphranor; now I think of it, the writers in optics tell us of an angle made by the two optic axes, where they meet in the visible point or object, which angle the obtuser it is the nearer it shews the object to be, and by how much the acuter by so much the farther off; and this by a necessary demonstrable connexion. *Euph.* The mind then finds out the distance of things by geometry? *Alc.* It doth. *Euph.* Should it not follow therefore, that nobody could see but those who had learned geometry, and knew something of lines and angles? *Alc.* There is a sort of natural geometry which is got without learning. *Euph.* Pray inform me, Alciphron, in order to frame a proof of any kind, or deduce one point from another, is it not necessary, that I perceive the connexion of the terms in the premises, and the connexion of the premises with the conclusion; and, in general, to know one thing by means of another, must I not first know that other thing? When I perceive your meaning by your words, must I not first perceive the words themselves? and must I not know the premises before I infer the conclusion? *Alc.* All this is true. *Euph.* Whoever therefore collects a nearer distance from a wider angle, or a farther distance from an acuter angle, must first perceive the angles themselves. And he who doth not perceive those angles, can infer nothing from them. Is it so or not? *Alc.* It is as you say. *Euph.* Ask now the first man you meet, whether he perceives or knows any thing of those optic angles? or whether he ever thinks about them, or makes any inferences from them, either by natural or artificial geometry? What answer do you think he would make? *Alc.* To speak

Digitized by Google

the truth, I believe his answer would be, that he knew nothing of these matters. *Euph.* It cannot therefore be, that men judge of distance by angles: nor consequently can there be any force in the argument you drew from thence, to prove that distance is perceived by means of something which hath a necessary connexion with it. *Alc.* I agree with you.

IX. *Euph.* To me it seems, that a man may know whether he perceives a thing or no; and if he perceives it, whether it be immediately or mediately: and if mediately, whether by means of something like or unlike, necessarily or arbitrarily connected with it. *Alc.* It seems so. *Euph.* And is it not certain, that distance is perceived only by experience, if it be neither perceived immediately by itself, nor by means of any image, nor of any lines and angles, which are like it, or have a necessary connexion with it? *Alc.* It is. *Euph.* Doth it not seem to follow, from what hath been said and allowed by you, that before all experience a man would not imagine, the things he saw were at any distance from him? *Alc.* How! let me see. *Euph.* The littleness or faintness of appearance, or any other idea or sensation, not necessarily connected with or resembling distance, can no more suggest different degrees of distance, or any distance at all, to the mind which hath not experienced a connexion of the things signifying and signified, than words can suggest notions before a man hath learned the language *Alc.* I allow this to be true. *Euph.* Will it not thence follow, that a man born blind, and made to see, would, upon first receiving his sight, take the things he saw, not to be at any distance from him, but in his eye or rather in his mind? *Alc.* I must own it seems so; and yet, on the other hand, I can hardly persuade myself, that if I were in such a state, I should think those objects, which I now see at so great distance, to be at no distance at all. *Euph.* It seems then, that you now think the objects of sight are at a distance from you?

Digitized by Google

Alc. Doubtless I do. Can any one question but yonder castle is at a great distance? *Euph.* Tell me, Alciphron, can you discern the doors, windows, and battlements, of that same castle? *Alc.* I cannot. At this distance it seems only a small round tower. *Euph.* But I, who have been at it, know that it is no small round tower, but a large square building with battlements and turrets, which it seems you do not see. *Alc.* What will you infer from thence? *Euph.* I would infer, that the very object, which you strictly and properly perceive by sight, is not that thing which is several miles distant. *Alc.* Why so? *Euph.* Because a little round object is one thing, and a great square object is another. Is it not? *Alc.* I cannot deny it. *Euph.* Tell me, is not the visible appearance alone the proper object of sight? *Alc.* It is. What think you now (said Euphranor, pointing towards the heavens) of the visible appearance of yonder planet? Is it not a round luminous flat, no bigger than a sixpence? *Alc.* What then? *Euph.* Tell me then, what you think of the planet itself. Do you not conceive it to be a vast opaque globe, with several unequal risings and vallies? *Alc.* I do. *Euph.* How can you therefore conclude, that the proper object of your sight exists at a distance? *Alc.* I confess I know not. *Euph.* For your farther conviction, do but consider that crimson cloud. Think you, that if you were in the very place where it is, you would perceive any thing like what you now see? *Alc.* By no means. I should perceive only a dark mist. *Euph.* Is it not plain, therefore, that neither the castle, the planet, nor the cloud, which you see here, are those real ones which you suppose exist at a distance?

X. *Alc.* What am I to think then? Do we see any thing at all, or is it altogether fancy and illusion? *Euph.* Upon the whole, it seems the proper objects of sight are light and colours, with their several shades and degrees, all which, being infinitely diversified and com-

Digitized by Google

bined, do form a language wonderfully adapted to suggest and exhibit to us the distances, figures, situations, dimensions, and various qualities, of tangible objects; not by similitude, nor yet by inference of necessary connexion, but by the arbitrary imposition of Providence, just as words suggest the things signified by them. *Alc.* How! do we not, strictly speaking, perceive by sight such things as trees, houses, men, rivers, and the like? *Euph.* We do, indeed, perceive or apprehend those things by the faculty of sight. But will it follow from thence, that they are the proper and immediate objects of sight, any more than that all those things are the proper and immediate objects of hearing, which are signified by the help of words or sounds? *Alc.* You would have us think then, that light, shades, and colours, variously combined, answer to the several articulations of sound in language, and that, by means thereof, all sorts of objects are suggested to the mind through the eye, in the same manner as they are suggested by words or sounds through the ear; that is, neither from necessary deduction to the judgment, nor from similitude to the fancy, but purely and solely from experience, custom, and habit. *Euph.* I would not have you think any thing more than the nature of things obligeth you to think, nor submit in the least to my judgment, but only to the force of truth, which is an imposition that I suppose the freest thinkers will not pretend to be exempt from. *Alc.* You have led me, it seems, step by step, till I am got I know not where. But I shall try to get out again, if not by the way I came, yet by some other of my own finding. Here Alciphron, having made a short pause, proceeded as follows.

XI. Answer me, Euphranor, should it not follow from these principles, that a man born blind, and made to see, would at first sight, not only not perceive their distance, but also not so much as know the very things themselves which he saw, for instance, men or trees?

Digitized by Google

which surely to suppose must be absurd. *Euph.* I grant, in consequence of those principles, which both you and I have admitted, that such a one would never think of men, trees, or any other objects, that he had been accustomed to perceive by touch, upon having his mind filled with new sensations of light and colours, whose various combinations he doth not yet understand, or know the meaning of, no more than a Chinese, upon first hearing the words *man* and *tree*, would think of the things signified by them. In both cases, there must be time and experience by repeated acts, to acquire a habit of knowing the connexion between the signs and things signified, that is to say, of understanding the language, whether of the eyes or of the ears. And I conceive no absurdity in all this. *Alc.* I see therefore, in strict philosophical truth, that rock only in the same sense that I may be said to hear it, when the word *rock* is pronounced. *Euph.* In the very same. *Alc.* How comes it to pass then, that every one shall say he sees, for instance, a rock or a house, when those things are before his eyes; but nobody will say he hears a rock or a house, but only the words or sounds themselves, by which those things are said to be signified or suggested, but not heard? besides, if vision be only a language speaking to the eyes, it may be asked, when did men learn this language? To acquire the knowledge of so many signs, as go to the making up a language, is a work of some difficulty. But will any man say he hath spent time, or been at pains, to learn this language of vision? *Euph.* No wonder we cannot assign a time beyond our remotest memory. If we have been all practising this language, ever since our first entrance into the world: if the author of nature constantly speaks to the eyes of all mankind, even in their earliest infancy, whenever the eyes are open in the light, whether alone or in company: it doth not seem to me at all strange, that men should not be aware they had ever learned a

Digitized by Google

language, begun so early, and practised so constantly, as this of vision. And if we also consider that it is the same throughout the whole world, and not, like other languages, differing in different places, it will not seem unaccountable, that men should mistake the connexion between the proper objects of sight and the things signified by them, to be founded in necessary relation, or likeness, or that they should even take them for the same things. Hence it seems easy to conceive, why men, who do not think, should confound in this language of vision the signs with the things signified, otherwise than they are wont to do, in the various particular languages formed by the several nations of men.

XII. It may be also worth while to observe, that signs being little considered in themselves, or for their own sake, but only in their relative capacity, and for the sake of those things whereof they are signs, it comes to pass, that the mind overlooks them, so as to carry its attention immediately on to the things signified. Thus, for example, in reading we run over the characters with the slightest regard, and pass on to the meaning. Hence it is frequent for men to say, they see words, and notions, and things, in reading of a book; whereas in strictness they see only the characters which suggest words, notions, and things. And by parity of reason, may we not suppose, that men, not resting in, but overlooking, the immediate and proper objects of sight, as in their own nature of small moment, carry their attention onward to the very things signified, and talk as if they saw the secondary objects, which, in truth and strictness, are not seen, but only suggested and apprehended by means of the proper objects of sight, which alone are seen? *Alc.* To speak my mind freely, this dissertation grows tedious, and runs into points too dry and minute for a gentleman's attention. I thought, said Crito, we had been told, that minute philosophers loved to consider things closely and minutely. *Alc.* That is true, but in so

Digitized by Google

polite an age who would be a mere philosopher? There is a certain scholastic accuracy, which ill suits the freedom and ease of a well-bred man. But, to cut short this chicane, I propound it fairly to your own conscience, whether you really think, that God himself speaks every day and in every place to the eyes of all men. *Euph.* That is really and in truth my opinion; and it should be yours too, if you are consistent with yourself, and abide by your own definition of language. Since you cannot deny, that the great mover and author of nature constantly explaineth himself to the eyes of men by the sensible intervention of arbitrary signs, which have no similitude or connexion with the things signified; so as by compounding and disposing them, to suggest and exhibit an endless variety of objects differing in nature, time, and place, thereby informing and directing men how to act with respect to things distant and future, as well as near and present. In consequence, I say, of your own sentiments and concessions, you have as much reason to think, the universal agent or God speaks to your eyes, as you can have for thinking any particular person speaks to your ears. *Alc.* I cannot help thinking, that some fallacy runs throughout this whole ratiocination, though perhaps I may not readily point it out. Hold! let me see. In language the signs are arbitrary, are they not? *Euph.* They are. *Alc.* And consequently, they do not always suggest real matters of fact. Whereas this natural language, as you call it, or these visible signs, do always suggest things in the same uniform way, and have the same constant regular connexion with matters of fact: whence it should seem, the connexion was necessary; and therefore, according to the definition premised, it can be no language. How do you solve this objection? *Euph.* You may solve it yourself, by the help of a picture or looking-glass. *Alc.* You are in the right. I see there is nothing in it. I know not what else to say to this opi-

Digitized by Google

nion, more than that it is so odd and contrary to my way of thinking, that I shall never assent to it.

XIII. *Euph.* Be pleased to recollect your own lectures upon prejudice, and apply them in the present case. Perhaps they may help you to follow where reason leads, and to suspect notions which are strongly riveted, without having been ever examined. *Alc.* I disdain the suspicion of prejudice. And I do not speak only for myself. I know a club of most ingenious men, the freest from prejudice of any men alive, who abhor the notion of a God, and I doubt not would be very able to untie this knot. Upon which words of Alciphron, I, who had acted the part of an indifferent stander-by, observed to him, that it misbecame his character and repeated professions, to own an attachment to the judgment, or build upon the presumed abilities, of other men, how ingenious soever; and that this proceeding might encourage his adversaries to have recourse to authority, in which perhaps they would find their account more than he. Oh! said Crito, I have often observed the conduct of minute philosophers. When one of them has got a ring of disciples round him, his method is to exclaim against prejudice, and recommend thinking and reasoning, giving to understand that himself is a man of deep researches and close argument, one who examines impartially and concludes warily. The same man in other company, if he chance to be pressed with reason, shall laugh at logic, and assume the lazy supine airs of a fine gentleman, a wit, a *railleur*, to avoid the dryness of a regular and exact inquiry. This double face of the minute philosopher is of no small use to propagate and maintain his notions. Though to me it seems a plain case, that if a fine gentleman will shake off authority, and appeal from religion to reason, unto reason he must go: and if he cannot go without leading strings, surely he had better be led by the authority of the public, than by that of any knot

Digitized by Google

of minute philosophers. *Alc.* Gentlemen, this discourse is very irksome, and needless. For my part, I am a friend to inquiry. I am willing reason should have its full and free scope. I build on no man's authority. For my part, I have no interest in denying a God. Any man may believe or not believe a God, as he pleases, for me. But after all, Euphranor must allow me to stare a little at his conclusions. *Euph.* The conclusions are yours as much as mine, for you were led to them by your own concessions.

XIV. You, it seems, stare to find, that "God is not far from every one of us," and that "in him we live, and move, and have our being." You, who in the beginning of this morning's conference thought it strange, that God should leave himself without a witness, do now think it strange the witness should be so full and clear. *Alc.* I must own I do. I was aware, indeed, of a certain metaphysical hypothesis, of our seeing all things in God by the union of the human soul with the intelligible substance of the Deity, which neither I nor any one else could make sense of. But I never imagined it could be pretended, that we saw God with our fleshly eyes as plain as we see any human person whatsoever, and that he daily speaks to our senses in a manifest and clear dialect. *Cri.* This language hath a necessary connexion with knowledge, wisdom, and goodness. It is equivalent to a constant creation, betokening an immediate act of power and providence. It cannot be accounted for by mechanical principles, by atoms, attractions, or effluvia. The instantaneous production and reproduction of so many signs combined, dissolved, transposed, diversified, and adapted to such an endless variety of purposes, ever shifting with the occasions and suited to them, being utterly inexplicable and unaccountable by the laws of motion, by chance, by fate, or the like blind principles, doth set forth and testify the immediate operation of a spirit or thinking being; and not merely of

Digitized by Google

a spirit, which every motion or gravitation may possibly infer, but of one wise, good, and provident Spirit, which directs and rules and governs the world. Some philosophers, being convinced of the wisdom and power of the Creator, from the make and contrivance of organized bodies and orderly system of the world, did nevertheless imagine, that he left this system with all its parts and contents well adjusted and put in motion, as an artist leaves a clock, to go thenceforward of itself for a certain period. But this visual language proves, not a Creator merely, but a provident governor actually and intimately present and attentive to all our interests and motions, who watches over our conduct, and takes care of our minutest actions and designs, throughout the whole course of our lives, informing, admonishing, and directing incessantly, in a most evident and sensible manner. This is truly wonderful. *Euph.* And is it not so, that men should be encompassed by such a wonder, without reflecting on it?

XV. Something there is of Divine and admirable in this language, addressed to our eyes, that may well awaken the mind, and deserve its utmost attention: it is learned with so little pains, it expresseth the differences of things so clearly and aptly, it instructs with such facility and dispatch, by one glance of the eye conveying a greater variety of advices and a more distinct knowledge of things, than could be got by a discourse of several hours: and, while it informs, it amuses and entertains the mind with such singular pleasure and delight: it is of such excellent use in giving a stability and permanency to human discourse, in recording sounds and bestowing life on dead languages, enabling us to converse with men of remote ages and countries: and it answers so apposite to the uses and necessities of mankind, informing us more distinctly of those objects, whose nearness and magnitude qualify them to be of greatest detriment or benefit to our bodies, and less exactly, in

Digitized by Google

proportion as their littleness or distance makes them of less concern to us. *Alc.* And yet these strange things affect men but little. *Euph.* But they are not strange, they are familiar, and that makes them be overlooked. Things that rarely happen strike; whereas frequency lessens the admiration of things, though in themselves ever so admirable. Hence a common man, who is not used to think and make reflections, would probably be more convinced of the being of a God, by one single sentence heard once in his life from the sky, than by all the experience he has had of this visual language, contrived with such exquisite skill, so constantly addressed to his eyes, and so plainly declaring the nearness, wisdom, and providence, of him with whom we have to do. *Alc.* After all, I cannot satisfy myself, how men should be so little surprised or amazed about this visive faculty, if it was really of a nature so surprising and amazing. *Euph.* But let us suppose a nation of men blind from their infancy, among whom a stranger arrives, the only man who can see in all the country; let us suppose this stranger travelling with some of the natives, and that one while he foretels to them, that, in case they walk straight forward, in half an hour they shall meet men or cattle, or come to a house; that if they turn to the right and proceed, they shall in a few minutes be in danger of falling down a precipice; that shaping their course to the left, they will in such a time arrive at a river, a wood, or a mountain. What think you? Must they not be infinitely surprised, that one, who had never been in their country before, should know it so much better than themselves? And would not those predictions seem to them as unaccountable and incredible, as prophecy to a minute philosopher? *Alc.* I cannot deny it. *Euph.* But it seems to require intense thought, to be able to unravel a prejudice that has been so long forming, to get over the vulgar errors of ideas common to both senses, and so to distinguish between

Digitized by Google

the objects of sight and touch,* which have grown (if I may so say), blended together in our fancy, as to be able to suppose ourselves exactly in the state, that one of those men would be in, if he were made to see. And yet this I believe is possible, and might seem worth the pains of a little thinking, especially to those men whose proper employment and profession it is to think, and unravel prejudices, and confute mistakes. *Alc.* I frankly own I cannot find my way out of this maze, and should gladly be set right by those who see better than myself. *Cri.* The pursuing this subject in their own thoughts would possibly open a new scene to those speculative gentlemen of the minute philosophy. It puts me in mind of a passage in the Psalmist, where he represents God to be covered with light as with a garment, and would methinks be no ill comment on that ancient notion of some eastern sages, that God had light for his body, and truth for his soul. This conversation lasted till a servant came to tell us the tea was ready: upon which we walked in, and found Lysicles at the tea-table.

XVI. As soon as we sat down, I am glad, said Alciphron, that I have here found my second, a fresh man to maintain our common cause, which, I doubt, Lysicles will think hath suffered by his absence. *Lys.* Why so? *Alc.* I have been drawn into some concessions you will not like. *Lys.* Let me know what they are. *Alc.* Why, that there is such a thing as a God, and that his existence is very certain. *Lys.* Bless me! how came you to entertain so wild a notion? *Alc.* You know we profess to follow reason wherever it leads. And in short I have been reasoned into it. *Lys.* Reasoned! You should say amused with words, bewildered with sophistry. *Euph.* Have you a mind to hear the same reasoning that led Alciphron and me step by step, that we

* See the foregoing Treatise, wherein this point and the whole Theory of Vision are more fully explained.

Digitized by Google

may examine whether it be sophistry or not? *Lys.* As to that I am very easy. I guess all that can be said on that head. It shall be my business to help my friend out, whatever arguments drew him in. *Euph.* Will you admit the premises and deny the conclusions? *Lys.* What if I admit the conclusion? *Euph.* How! will you grant there is a God? *Lys.* Perhaps I may. *Euph.* Then we are agreed. *Lys.* Perhaps not. *Euph.* O Lysicles, you are a subtle adversary. I know not what you would be at. *Lys.* You must know then, that at bottom the being of a God is a point in itself of small consequence, and a man may make this concession without yielding much. The great point is what sense the word God is to be taken in. The very Epicureans allow the being of gods; but then they were indolent gods, unconcerned with human affairs. Hobbes allowed a corporeal God; and Spinosa held the universe to be God. And yet nobody doubts they were staunch free-thinkers. I could wish indeed the word God were quite omitted, because in most minds it is coupled with a sort of superstitious awe, the very root of all religion. I shall not, nevertheless, be much disturbed, though the name be retained, and the being of a God allowed in any sense but in that of a mind, which knows all things, and beholds human actions, like some judge or magistrate with infinite observation and intelligence. The belief of a God in this sense fills a man's mind with scruples, lays him under constraints, and embitters his very being; but in another sense, it may be attended with no great ill consequence. This I know was the opinion of our great Diagoras, who told me he would never have been at the pains to find out a demonstration that there was no God, if the received notion of God had been the same with that of some fathers and schoolmen. *Euph.* Pray what was that?

XVII. *Lys.* You must know, Diagoras, a man of much reading and inquiry, had discovered that once

Digitized by Google

upon a time, the most profound and speculative divines finding it impossible to reconcile the attributes of God, taken in the common sense, or in any known sense, with human reason, and the appearance of things, taught that the words knowledge, wisdom, goodness, and such like, when spoken of the Deity, must be understood in a quite different sense, from what they signify in the vulgar acceptation, or from any thing that we can form a notion of, or conceive. Hence, whatever objections might be made against the attributes of God they easily solved, by denying those attributes belonged to God, in this or that or any known particular sense or notion; which was the same thing as to deny they belonged to him at all. And thus denying the attributes of God, they in effect denied his being, though perhaps they were not aware of it. Suppose, for instance, a man should object, that future contingencies were inconsistent with the foreknowledge of God, because it is repugnant that certain knowledge should be of an uncertain thing: it was a ready and an easy answer to say, that this may be true, with respect to knowledge taken in the common sense, or in any sense that we can possibly form any notion of; but that there would not appear the same inconsistency, between the contingent nature of things and Divine foreknowledge, taken to signify somewhat that we know nothing of, which in God supplies the place of what we understand by knowledge; from which it differs not in quantity or degree of perfection, but altogether, and in kind, as light doth from sound; and even more, since these agree in that they are both sensations: whereas knowledge in God hath no sort of resemblance or agreement with any notion that man can frame of knowledge. The like may be said of all the other attributes, which indeed may by this means be equally reconciled with every thing or with nothing. But all men who think must needs see, this is cutting knots and not untying them. For how

Digitized by Google

are things reconciled with the Divine attributes, when these attributes themselves are in every intelligible sense denied; and consequently the very notion of God taken away, and nothing left but the name, without any meaning annexed to it? In short, the belief that there is an unknown subject of attributes absolutely unknown is a very innocent doctrine; which the acute Diagoras well saw, and was therefore wonderfully delighted with this system.

XVIII. For, said he, if this could once make its way and obtain in the world, there would be an end of all natural or rational religion, which is the basis both of the Jewish and the Christian: for he who comes to God, or enters himself in the church of God, must first believe that there is a God in some intelligible sense; and not only that there is something in general without any proper notion, though never so inadequate, of any of its qualities or attributes; for this may be fate, or chaos, or plastic nature, or any thing else as well as God. Nor will it avail to say, there is something in this unknown being analogous to knowledge and goodness; that is to say, which produceth those effects, which we could not conceive to be produced by men in any degree, without knowledge and goodness. For this is in fact to give up the point in dispute between theists and atheists, the question having always been, not whether there was a principle (which point was allowed by all philosophers as well before as since Anaxagoras), but whether this principle was a νοῦς, a thinking intelligent being: that is to say, whether that order and beauty and use, visible in natural effects, could be produced by any thing but a mind or intelligence, in the proper sense of the word; and whether there must not be true, real, and proper knowledge, in the first cause. We will therefore acknowledge, that all those natural effects which are vulgarly ascribed to knowledge and wisdom, proceed from a being in which there is, properly speak-

Digitized by Google

ing, no knowledge or wisdom at all, but only something else, which in reality is the cause of those things which men, for want of knowing better, ascribe to what they call knowledge and wisdom and understanding. You wonder perhaps to hear a man of pleasure, who diverts himself as I do, philosophize at this rate. But you should consider that much is to be got by conversing with ingenious men, which is a short way to knowledge, that saves a man the drudgery of reading and thinking. And now we have granted to you that there is a God in this indefinite sense, I would fain see what use you can make of this concession. You cannot argue from unknown attributes, or, which is the same thing, from attributes in an unknown sense. You cannot prove, that God is to be loved for his goodness, or feared for his justice, or respected for his knowledge: all which consequences, we own, would follow from those attributes admitted in an intelligible sense. But we deny, that those or any other consequences can be drawn from attributes admitted in no particular sense, or in a sense which none of us understand. Since therefore nothing can be inferred from such an account of God, about conscience, or worship, or religion, you may even make the best of it; and, not to be singular, we will use the name too, and so at once there is an end of atheism. *Euph.* This account of a Deity is new to me. I do not like it, and therefore shall leave it to be maintained by those who do.

XIX. *Cri.* It is not new to me. I remember not long since to have heard a minute philosopher triumph upon this very point; which put me on inquiring what foundation there was for it in the fathers or schoolmen. And for aught that I can find, it owes its original to those writings, which have been published under the name of Dionysius the Areopagite. The author of which, it must be owned, hath written upon the Divine attributes in a very singular style. In his treatise of

Digitized by Google

the Celestial Hierarchy* he saith that God is something above all essence and life, ὑπὲρ πᾶσαν οὐσίαν καὶ ζωὴν; and again in his treatise of the Divine Names,† that he is above all wisdom and understanding, ὑπὲρ πᾶσαν σοφίαν καὶ σύνεσιν, *ineffable and innominable*, ἄῤῥητος καὶ ἀνώνυμος; the wisdom of God he terms an unreasonable, unintelligent, and foolish wisdom; τὴν ἄλογον καὶ ἄνουν καὶ μωρὰν σοφίαν. But then the reason he gives for expressing himself in this strange manner, is that the Divine wisdom is the cause of all reason, wisdom, and understanding, and therein are contained the treasures of all wisdom and knowledge. He calls God ὑπέρσοφος and ὑπέρζως; as if wisdom and life were words not worthy to express the Divine perfections: and he adds, that the attributes unintelligent and unperceiving must be ascribed to the Divinity, not κατ' ἔλλειψιν by way of defect, but καθ' ὑπεροχὴν by way of eminency; which he explains by our giving the name of darkness to light inaccessible. And, notwithstanding the harshness of his expressions in some places, he affirms over and over in others, that God knows all things; not that he is beholden to the creatures for his knowledge, but by knowing himself, from whom they all derive their being, and in whom they are contained as in their cause. It was late before these writings appear to have been known in the world; and although they obtained credit during the age of the schoolmen, yet since critical learning hath been cultivated, they have lost that credit, and are, at this day, given up for spurious, as containing several evident marks of a much later date than the age of Dionysius. Upon the whole, although this method of growing in expression, and dwindling in notion, as clearing up doubts by nonsense, and avoiding difficulties by running into affected contradictions, may perhaps proceed from a well-meant zeal; yet it appears not to be according to knowledge, and instead of reconciling atheists

* De Hierarch. Celest. cap. ii. † De Nom. Div. cap. vii.

Digitized by Google

to the truth, hath, I doubt, a tendency to confirm them in their own persuasion. It should seem, therefore, very weak and rash in a Christian to adopt this harsh language of an apocryphal writer, preferably to that of the Holy Scriptures. I remember, indeed, to have read of a certain philosopher, who lived some centuries ago, that used to say, If these supposed works of Dionysius had been known to the primitive fathers, they would have furnished them admirable weapons against the heretics, and would have saved a world of pains. But the event since their discovery hath by no means confirmed his opinion. It must be owned, the celebrated Picus of Mirandula, among his nine hundred conclusions (which that prince, being very young, proposed to maintain by public disputation at Rome), hath this for one; to wit, that it is more improper to say of God, he is an intellect or intelligent Being, than to say of a reasonable soul that it is an angel: which doctrine it seems was not relished. And Picus, when he comes to defend it, supports himself altogether by the example and authority of Dionysius, and in effect explains it away into a mere verbal difference, affirming, that neither Dionysius nor himself ever meant to deprive God of knowledge, or to deny that he knows all things: but that, as reason is of kind peculiar to man, so by intellection he understands a kind or manner of knowing peculiar to angels: and that the knowledge, which is in God, is more above the intellection of angels, than angel is above man. He adds, that, as his tenet consists with admitting the most perfect knowledge in God, so he would by no means be understood to exclude from the Deity intellection itself, taken in the common or general sense, but only that peculiar sort of intellection proper to angels, which he thinks ought not to be attributed to God any more than human reason. Picus,* therefore, though he speaks as the apocryphal Dionysius, yet when he ex-

* Pic. Mirand. in Apolog. p. 155. ed. Bas.

Digitized by Google

plains himself, it is evident he speaks like other men. And although the forementioned books of the Celestial Hierarchy and of the Divine Names, being attributed to a saint and martyr of the apostolical age, were respected by the schoolmen, yet it is certain they rejected or softened his harsh expressions, and explained away or reduced his doctrine to the received notions taken from Holy Scripture, and the light of nature.

XX. Thomas Aquinas expresseth his sense of this point in the following manner. All perfections, saith he, derived from God to the creatures are in a certain higher sense, or (as the schoolmen term it) eminently in God. Whenever, therefore, a name borrowed from any perfection in the creature is attributed to God, we must exclude from its signification every thing that belongs to the imperfect manner, wherein that attribute is found in the creature. Whence he concludes, that knowledge in God is not a habit, but a pure act.* And again, the same Doctor observes, that our intellect gets its notions of all sorts of perfections from the creatures, and that as it apprehends those perfections, so it signifies them by names. Therefore, saith he, in attributing these names to God, we are to consider two things; first the perfections themselves, as goodness, life, and the like, which are properly in God; and, secondly, the manner which is peculiar to the creature, and cannot, strictly and properly speaking, be said to agree to the Creator.† And although Suarez, with other schoolmen, teacheth, that the mind of man conceiveth knowledge and will to be in God as faculties or operations, by analogy only to created beings; yet he gives it plainly as his opinion, that when knowledge is said not to be properly in God, it must be understood in a sense including imperfection, such as discursive knowledge, or the like imperfect kind found in the creatures: and that none of those

* Sum. Theolog. p. i. quest. xiv. art. i.
† Ibid. quest. xiii. art. iii.

Digitized by Google

imperfections in the knowledge of men or angels belonging to the formal notion of knowledge, or to knowledge as such, it will not thence follow that knowledge, in its proper formal sense, may not be attributed to God: and of knowledge taken in general for the clear evident understanding of all truth, he expressly affirms that it is in God, and that this was never denied by any philosopher who believed a God.* It was, indeed, a current opinion in the schools, that even being itself should be attributed analogically to God and the creatures. That is, they held that God, the supreme, independent, self-originate cause and source of all beings, must not be supposed to exist in the same sense with created beings, not that he exists less truly, properly, or formally, than they, but only because he exists in a more eminent and perfect manner.

XXI. But to prevent any man's being led, by mistaking the scholastic use of the terms *analogy* and *analogical*, into an opinion that we cannot frame in any degree, a true and proper notion of attributes applied by analogy, or in the school phrase, predicated analogically, it may not be amiss to inquire into the true sense and meaning of those words. Every one knows, that analogy is a Greek word used by mathematicians, to signify a similitude of proportions. For instance, when we observe that two is to six as three is to nine, this similitude or equality of proportion is termed analogy. And although proportion strictly signifies the habitude or relation of one quantity to another, yet, in a looser and translated sense, it hath been applied to signify every other habitude; and consequently the term analogy comes to signify all similitude of relations, or habitudes whatsoever. Hence the schoolmen tell us, there is analogy between intellect and sight: forasmuch as intellect is to the mind, what sight is to the body; and that he who governs the state is analogous to him who

* Suarez disp. Metaph. tom. ii. disp. xxx. sect. xv.

Digitized by Google

steers a ship. Hence a prince is analogically styled a pilot, being to the state as a pilot is to his vessel.* For the farther clearing of this point it is to be observed that a twofold analogy is distinguished by the schoolmen, metaphorical and proper. Of the first kind there are frequent instances in Holy Scripture, attributing human parts and passions to God. When he is represented as having a finger, an eye, or an ear; when he is said to repent, to be an angry, or grieved; every one sees that analogy is merely metaphorical. Because those parts and passions, taken in the proper signification, must in every degree necessarily, and from the formal nature of the thing, include imperfection. When, therefore, it is said, the finger of God appears in this or that event, men of common sense mean no more, but that it is as truly ascribed to God, as the works wrought by human fingers are to man: and so of the rest. But the case is different, when wisdom and knowledge are attributed to God. Passions and senses, as such, imply defect; but in knowledge simply, or as such, there is no defect. Knowledge therefore, in the proper formal meaning of the word, may be attributed to God proportionably, that is, preserving a proportion to the infinite nature of God. We may say, therefore, that as God is infinitely above man, so is the knowledge of God infinitely above the knowledge of man, and this is what Cajetan calls *analogia proprie facta*. And after this same analogy, we must understand all those attributes to belong to the Deity, which in themselves simply, and as such, denote perfection. We may therefore, consistently with what hath been premised, affirm, that all sorts of perfection which we can conceive in a finite spirit are in God, but without any of that allay which is found in the creatures. This doctrine therefore of analogical perfections in God or our knowing God by analogy, seems very much misunderstood and misapplied by those who would infer

* Vide Cajetan. de Nom. Analog. cap. iii.

Digitized by Google

from thence that we cannot frame any direct or proper notion, though never so inadequate, of knowledge or wisdom, as they are in the Deity, or understand any more of them than one born blind can of light and colours.

XXII. And now, gentleman, it may be expected I should ask your pardon, for having dwelt so long on a point of metaphysics, and introduced such unpolished and unfashionable writers as the schoolmen into good company: but as Lysicles gave the occasion, I leave him to answer for it. *Lys.* I never dreamt of this dry dissertation. But, if I have been the occasion of discussing these scholastic points, by my unluckily mentioning the schoolmen, it was my first fault of the kind, and I promise it shall be the last. The meddling with crabbed authors of any sort is none of my taste. I grant one meets now and then with a good notion in what we call dry writers, such a one for example as this I was speaking of, which I must own struck my fancy. But then for these we have such as Prodicus or Diagoras, who look into obsolete books, and save the rest of us that trouble. *Cri.* So you pin your faith upon them? *Lys.* It is only for some odd opinions, and matters of fact, and critical points. Besides, we know the men to whom we give credit: they are judicious and honest, and have no end to serve but truth. And I am confident some author or other has maintained the forementioned notion in the same sense as Diagoras related it. *Cri.* That may be. But it never was a received notion, and never will, so long as men believe a God; the same arguments that prove a first cause proving an intelligent cause; intelligent, I say, in the proper sense: wise and good in the true and formal acceptation of the words. Otherwise it is evident, that every syllogism brought to prove those attributes, or (which is the same thing) to prove the being of a God, will be found to consist of four terms, and consequently can conclude nothing. But for your

Digitized by Google

part, Alciphron, you have been fully convinced, that God is a thinking intelligent being in the same sense with other spirits, though not in the same imperfect manner or degree.

XXIII. *Alc.* And yet I am not without my scruples: for with knowledge you infer wisdom, and with wisdom goodness. But how is it possible, to conceive God so good, and man so wicked? It may perhaps, with some colour, be alleged, that a little soft shadowing of evil sets off the bright and luminous parts of the creation, and so contributes to the beauty of the whole piece; but, for blots so large and so black, it is impossible to account by that principle. That there should be so much vice and so little virtue upon earth, and that the laws of God's kingdom should be so ill observed by his subjects, is what can never be reconciled with that surpassing wisdom and goodness of the supreme Monarch. *Euph.* Tell me, Alciphron, would you argue that a state was ill administered, or judge of the manners of its citizens, by the disorders committed in the jail or dungeon? *Alc.* I would not. *Euph.* And for aught we know, this spot with the few sinners on it, bears no greater proportion to the universe of intelligences, than a dungeon doth to a kingdom. It seems we are led not only by revelation but by common sense, observing and inferring from the analogy of visible things, to conclude there are innumerable orders of intelligent beings more happy and more perfect than man, whose life is but a span, and whose place this earthly globe is but a point in respect of the whole system of God's creation. We are dazzled indeed with the glory and grandeur of things here below, because we know no better. But I am apt to think, if we knew what it was to be an angel for one hour, we should return to this world, though it were to sit on the brightest throne in it, with vastly more loathing and reluctance, than we would now descend into a loathsome dungeon or sepulchre.

XXIV. *Cri.* To me it seems natural, that such a weak,

Digitized by Google

passionate, and short-sighted creature as man, should be ever liable to scruples of one kind or other. But, as this same creature is apt to be over positive in judging, and over hasty in concluding, it falls out, that these difficulties and scruples about God's conduct are made objections to his being. And so men come to argue from their own defects against the Divine perfections. And, as the views and humours of men are different and often opposite, you may sometimes see them deduce the same atheistical conclusions from contrary premises. I knew an instance of this, in two minute philosophers of my acquaintance, who used to argue each from his own temper against a Providence. One of them, a man of a choleric and vindictive spirit, said he could not believe a Providence, because London was not swallowed up or consumed by fire from heaven, the streets being as he said full of people, who shew no other belief or worship of God, but perpetually praying that he would damn, rot, sink, and confound them. The other being of an indolent easy temper, concluded there could be no such thing as Providence, for that a being of consummate wisdom must needs employ himself better, than in minding the prayers, and actions, and little interests, of mankind. *Alc.* After all, if God have no passions, how can it be true that vengeance is his? Or how can he be said to be jealous of his glory? *Cri.* We believe that God executes vengeance without revenge, and is jealous without weakness, just as the mind of man sees without eyes, and apprehends without hands.

XXV. *Alc.* To put a period to this discourse, we will grant, there is a God in this dispassionate sense; but what then? What hath this to do with religion or Divine worship? To what purpose are all these prayers, and praises, and thanksgivings, and singing of psalms, which the foolish vulgar call serving God? What sense, or use, or end, is there in all these things? *Cri.* We worship God, we praise and pray to him: not because

Digitized by Google

we think that he is proud of our worship, or fond of our praise or prayers, and affected with them as mankind are, or that all our service can contribute in the least degree to his happiness or good: but because it is good for us to be so disposed towards God: because it is just and right, and suitable to the nature of things, and becoming the relation we stand in to our supreme Lord and Governor. *Alc.* If it be good for us to worship God; it should seem that the Christian religion, which pretends to teach men the knowledge and worship of God, was of some use and benefit to mankind? *Cri.* Doubtless. *Alc.* If this can be made appear, I shall own myself very much mistaken. *Cri.* It is now near dinner-time. Wherefore if you please, we will put an end to this conversation for the present, and to-morrow morning resume our subject.

Digitized by Google

THE FIFTH DIALOGUE.

I. Minute philosophers join in the cry, and follow the scent, of others. II. Worship prescribed by the Christian religion suitable to God and man. III. Power and influence of the Druids. IV. Excellency and usefulness of the Christian religion. V. It ennobles mankind, and makes them happy. VI. Religion neither bigotry nor superstition. VII. Physicians and physic for the soul. VIII. Character of the clergy. IX. Natural religion and human reason not to be disparaged. X. Tendency and use of the Gentile religion. XI. Good effects of Christianity. XII. Englishmen compared with ancient Greeks and Romans. XIII. The modern practice of duelling. XIV. Character of the old Romans, how to be formed. XV. Genuine fruits of the gospel. XVI. Wars and factions not an effect of the Christian religion. XVII. Civil rage and massacres in Greece and Rome. XVIII. Virtue of the ancient Greeks. XIX. Quarrels of polemical divines. XX. Tyranny, usurpation, and sophistry, of ecclesiastics. XXI. The universities censured. XXII. Divine writings of a certain modern critic. XXIII. Learning the effect of religion. XXIV. Barbarism of the schools. XXV. Restoration of learning and polite arts, to whom owing. XXVI. Prejudice and ingratitude of minute philosophers. XXVII. Their pretensions and conduct inconsistent. XXVIII. Men and brutes compared with respect to religion. XXIX. Christianity the only means to establish natural religion. XXX. Free-thinkers mistake their talents; have a strong imagination. XXXI. Tithes and church-lands. XXXII. Men distinguished from human creatures. XXXIII. Distribution of mankind into birds, beasts, and fishes. XXXIV. Plea for reason allowed, but unfairness taxed. XXXV. Freedom a blessing, or a curse, as it is used. XXXVI. Priestcraft not the reigning evil.

I. We amused ourselves next day every one to his fancy, till nine of the clock, when word was brought that the tea-table was set in the library, which is a gallery on the ground-floor, with an arched door at one end opening into a walk of limes; where, as soon as we had drunk tea, we were tempted by fine weather to take a walk which led us to a small mount of easy ascent, on

Digitized by Google

the top whereof we found a seat under a spreading tree. Here we had a prospect on one hand of a narrow bay or creek of the sea, enclosed on either side by a coast beautified with rocks, and woods, and green banks, and farm-houses. At the end of the bay was a small town placed upon the slope of a hill, which from the advantage of its situation made a considerable figure. Several fishing-boats and lighters gliding up and down on a surface as smooth and bright as glass enlivened the prospect. On the other side we looked down on green pastures, flocks, and herds, basking beneath in sun-shine, while we in our superior situation enjoyed the freshness of air and shade. Here we felt that sort of joyful instinct which a rural scene and fine weather inspire; and proposed no small pleasure, in resuming and continuing our conference without interruption till dinner: but we had hardly seated ourselves, and looked about us, when we saw a fox run by the foot of our mount into an adjacent thicket. A few minutes after, we heard a confused noise of the opening of hounds, the winding of horns, and the roaring of country squires. While our attention was suspended by this event, a servant came running out of breath, and told Crito, that his neighbour Ctesippus, a squire of note, was fallen from his horse, attempting to leap ever a hedge, and brought into the hall, where he lay for dead. Upon which we all rose and walked hastily to the house, where we found Ctesippus just come to himself, in the midst of half-a-dozen sun-burnt squires in frocks and short wigs and jockey-boots. Being asked how he did? he answered it was only a broken rib. With some difficulty Crito persuaded him to lie on a bed till the chirurgeon came. These fox-hunters, having been up early at their sport, were eager for dinner, which was accordingly hastened. They passed the afternoon in a loud rustic mirth, gave proof of their religion and loyalty by the healths they drank, talked of hounds and horses and elections and country fairs till the chirurgeon, who

Digitized by Google

had been employed about Ctesippus, desired he might be put into Crito's coach, and sent home, having refused to stay all night. Our guests being gone, we reposed ourselves after the fatigue of this tumultuous visit, and next morning assembled again at the seat on the mount. Now Lysicles, being a nice man, and a *bel-esprit*, had an infinite contempt for the rough manners and conversation of fox-hunters, and could not reflect with patience that he had lost, as he called it, so many hours in their company. I flattered myself, said he, that there had been none of this species remaining among us: strange that men should be diverted with such uncouth noise and hurry, or find pleasure in the society of dogs and horses! How much more elegant are the diversions of the town! There seems, replied Euphranor, to be some resemblance between fox-hunters and free-thinkers; the former exerting their animal faculties in pursuit of game, as you gentlemen employ your intellectuals in the pursuit of truth. The kind of amusement is the same, although the object be different. *Lys.* I had rather be compared to any brute upon earth than a rational brute. *Cri.* You would then have been less displeased with my friend Pythocles, whom I have heard compare the common sort of minute philosophers, not to the hunters, but the hounds. For, said he, you shall often see among the dogs a loud babbler, with a bad nose, lead the unskilful part of the pack, who join all in his cry without following any scent of their own, any more than the herd of free-thinkers follow their own reason.

II. But Pythocles was a blunt man, and must never have known such reasoners among them as you gentlemen, who can sit so long at an argument, dispute every inch of ground, and yet know when to make a reasonable concession. *Lys.* I do not know how it comes to pass, but methinks Alciphron makes concessions for himself and me too. For my own part, I am not altogether of such a yielding temper: but yet I do not care

Digitized by Google

to be singular neither. *Cri.* Truly, Alciphron, when I consider where we are got, and how far we are agreed, I conceive it probable we may agree altogether in the end. You have granted that a life of virtue is upon all accounts eligible, as most conducive both to the general and particular good of mankind: and you allow, that the beauty of virtue alone is not a sufficient motive with mankind to the practice of it. This led you to acknowledge, that the belief of a God would be very useful in the world; and that consequently you should be disposed to admit any reasonable proof of his being: which point hath been proved, and you have admitted the proof. If then we admit a Divinity, why not Divine worship? and if worship, why not religion to teach this worship? and if a religion, why not the Christian, if a better cannot be assigned, and it be already established by the laws of our country, and handed down to us from our forefathers? Shall we believe a God, and not pray to him for future benefits, nor thank him for the past? Neither trust in his protection, nor love his goodness, nor praise his wisdom, nor adore his power? And if these things are to be done, can we do them in a way more suitable to the dignity of God or man, than is prescribed by the Christian religion? *Alc.* I am not, perhaps, altogether sure that religion must be absolutely bad for the public: but I cannot bear to see policy and religion walk hand in hand: I do not like to see human rights attached to the Divine: I am for no *pontifex maximus*, such as in ancient or in modern Rome: no high-priest, as in Judea: no royal priests, as in Egypt and Sparta: no such things as Dairos of Japan, or Lamas of Tartary.

III. I knew a late witty gentleman of our sect, who was a great admirer of the ancient Druids. He had a mortal antipathy to the present established religion, but used to say, he should like well to see the Druids and their religion restored, as it anciently flourished in Gaul and Britain; for it would be right enough that there

Digitized by Google

should be a number of contemplative men set apart to preserve a knowledge of arts and sciences, to educate youth, and teach men the immortality of the soul and the moral virtues. Such, said he, were the Druids of old, and I should be glad to see them once more established among us. *Cri.* How would you like, Alciphron, that priests should have power to decide all controversies, and adjudge property, distribute rewards and punishments; that all who did not acquiesce in their decrees should be excommunicated, held in abhorrence, excluded from all honours and privileges, and deprived of the common benefit of the laws; and that now and then, a number of laymen should be crammed together in a wicker-idol, and burnt for an offering to their pagan gods? How should you like living under such priests and such a religion? *Alc.* Not at all. Such a situation would by no means agree with free-thinkers. *Cri.* And yet such were the Druids and such their religion, if we may trust Cesar's account of them.* *Lys.* I am now convinced more than ever, there ought to be no such thing as an established religion of any kind. Certainly all the nations of the world have been hitherto out of their wits. Even the Athenians themselves, the wisest and freest people upon earth, had I know not what foolish attachment to their established church. They offered, it seems, a talent as a reward to whoever should kill Diagoras the Melian, a free-thinker of those times who derided their mysteries: and Protagoras, another of the same turn, narrowly escaped being put to death, for having wrote something that seemed to contradict their received notions of the gods. Such was the treatment our generous sect met with at Athens. And I make no doubt, but these Druids would have sacrificed many a holocaust of free-thinkers. I would not give a single farthing to exchange one religion for another. Away with all together, root and branch, or you had as

* De Bello Gallico, lib. vi.

Digitized by Google

good do nothing. No Druids or priests of any sort for me: I see no occasion for any of them.

IV. *Euph.* What Lysicles saith puts me in mind of the close of our last conference, wherein it was agreed, in the following to resume the point we were then entered upon, to wit, the use or benefit of the Christian religion, which Alciphron expected Crito should make appear. *Cri.* I am the readier to undertake this point, because I conceive it to be no difficult one, and that one great mark of the truth of Christianity is, in my mind, its tendency to do good, which seems the north star to conduct our judgment in moral matters, and in all things of a practic nature; moral or practical truths being ever connected with universal benefit. But to judge rightly of this matter, we should endeavour to act like Lysicles upon another occasion, taking into our view the sum of things, and considering principles as branched forth into consequences to the utmost extent we are able. We are not so much to regard the humour or caprice, or imaginary distresses, of a few idle men, whose conceit may be offended, though their conscience cannot be wounded; but fairly to consider the true interest of individuals as well as of human society. Now the Christian religion, considered as a fountain of light, and joy, and peace, as a source of faith, and hope, and charity (and that it is so will be evident to whoever takes his notion of it from the gospel), must needs be a principle of happiness and virtue. And he who sees not, that the destroying the principles of good actions must destroy good actions, sees nothing: and he who, seeing this, shall yet persist to do it, if he be not wicked, who is?

V. To me it seems the man can see neither deep nor far, who is not sensible of his own misery, sinfulness, and dependence; who doth not perceive, that this present world is not designed or adapted to make rational souls happy; who would not be glad of getting into a

Digitized by Google

better state, and who would not be overjoyed to find, that the road leading thither was the love of God and man, the practising every virtue, the living reasonably while we are here upon earth, proportioning our esteem to the value of things, and so using this world as not to abuse it, for this is what Christianity requires. It neither enjoins the nastiness of the Cynic, nor the insensibility of the Stoic. Can there be a higher ambition than to overcome the world, or a wiser than to subdue ourselves, or a more comfortable doctrine than the remission of sins, or a more joyful prospect than that of having our base nature renewed and assimilated to the Deity, our being made fellow-citizens with angels and sons of God? Did ever Pythagoreans, or Platonists, or Stoics, even in idea or in wish, propose to the mind of man purer means or a nobler end? How great a share of our happiness depends upon hope! How totally is this extinguished by the minute philosophy! On the other hand, how is it cherished and raised by the gospel! Let any man who thinks in earnest but consider these things, and then say which he thinks deserveth best of mankind, he who recommends or he who runs down Christianity? Which he thinks likelier to lead a happy life, to be a hopeful son, an honest dealer, a worthy patriot, he who sincerely believes the gospel, or he who believes not one tittle of it? He who aims at being a child of God, or he who is contented to be thought, and to be, one of Epicurus's hogs? And in fact do but scan the characters and observe the behaviour of the common sort of men on both sides: observe and say which live most agreeably to the dictates of reason? How things should be, the reason is plain; how they are, I appeal to fact.

VI. *Alc.* It is wonderful to observe how things change appearance, as they are viewed in different lights, or by different eyes. The picture, Crito, that I form of religion is very unlike yours, when I consider how it

Digitized by Google

unmans the soul, filling it with absurd reveries and slavish fears; how it extinguishes the gentle passions, inspiring a spirit of malice, and rage, and persecution: when I behold bitter resentments and unholy wrath in those very men, who preach up meekness and charity to others. *Cri.* It is very possible, that gentlemen of your sect may think religion a subject beneath their attention; but yet it seems that whoever sets up for opposing any doctrine, should know what it is he disputes against. Know then, that religion is the virtuous mean between incredulity and superstition. We do not therefore contend for superstitious follies, or for the rage of bigots. What we plead for is religion against profaneness, law against confusion, virtue against vice, the hope of a Christian against the despondency of an atheist. I will not justify bitter resentments and unholy wrath in any man, much less in a Christian, and least of all in a clergyman. But if sallies of human passion should sometimes appear even in the best, it will not surprise any one who reflects on the sarcasms and ill manners with which they are treated by the minute philosophers. For as Cicero somewhere observes, *Habet quendam aculeum contumelia, quem pati prudentes ac viri boni difficillime possunt.* But although you might sometimes observe particular persons, professing themselves Christians, run into faulty extremes of any kind through passion and infirmity, while infidels of a more calm and dispassionate temper shall perhaps behave better. Yet these natural tendencies on either side prove nothing, either in favour of infidel principles, or against Christian. If a believer doth evil, it is owing to the man not to his belief. And if an infidel doth good, it is owing to the man and not to his infidelity.

VII. *Lys.* To cut this matter short, I shall borrow an allusion to physic, which one of you made use of against our sect. It will not be denied, that the clergy pass for physicians of the soul, and that religion is a

Digitized by Google

sort of medicine which they deal in and administer. If then souls in great numbers are diseased and lost, how can we think the physician skilful or his physic good? It is a common complaint, that vice increases, and men grow daily more and more wicked. If a shepherd's flock be diseased or unsound, who is to blame but the shepherd, for neglecting or not knowing how to cure them? A fig therefore for such shepherds, such physic, and such physicians, who like other mountebanks, with great gravity and elaborate harangues, put off their pills to the people, who are never the better for them! *Euph.* Nothing seems more reasonable than this remark, that men should judge of a physician and his physic by its effect on the sick. But pray, Lysicles, would you judge of a physician by those sick, who take his physic and follow his prescriptions, or by those who do not? *Lys.* Doubtless, by those who do. *Euph.* What shall we say then, if great numbers refuse to take the physic, or instead of it take poison of a direct contrary nature prescribed by others, who make it their business to discredit the physician and his medicines, to hinder men from using them, and to destroy their effect by drugs of their own? Shall the physician be blamed for the miscarriage of those people? *Lys.* By no means. *Euph.* By a parity of reason should it not follow, that the tendency of religious doctrines ought to be judged of by the effects which they produce, not upon all who hear them, but upon those only who receive or believe them. *Lys.* It seems so. *Euph.* Therefore, to proceed fairly, shall we not judge of the effects of religion by the religious, of faith by believers, of Christianity by Christians?

VIII. *Lys.* But I doubt these sincere believers are very few. *Euph.* But it will not suffice to justify our principles, if in proportion to the numbers which receive them, and the degree of faith with which they are received, they produce good effects? Perhaps the number of believers are not so few as you imagine; and if

Digitized by Google

they were, whose fault is that so much as of those who make it their professed endeavour to lessen that number? And who are those but the minute philosophers? *Lys.* I tell you it is owing to the clergy themselves, to the wickedness and corruption of clergymen. *Euph.* And who denies but there may be minute philosophers even among the clergy? *Cri.* In so numerous a body it is to be presumed there are men of all sorts. But notwithstanding the cruel reproaches cast upon that order by their enemies, an equal observer of men and things will, if I mistake not, be inclined to think those reproaches owing as much to other faults as those of the clergy, especially if he considers the declamatory manner of those who censure them. *Euph.* My knowledge of the world is too narrow for me to pretend to judge of the virtue and merit and liberal attainments of men in the several professions. Besides I should not care for the odious work of comparison: but I may venture to say, the clergy of this country where I live are by no means a disgrace to it: on the contrary, the people seem much the better for their example and doctrine. But supposing the clergy to be (what all men certainly are) sinners and faulty; supposing you might spy out here and there among them even great crimes and vices, what can you conclude against the profession itself from its unworthy professors, any more than from the pride, pedantry, and bad lives, of some philosophers against philosophy, or of lawyers against law?

IX. It is certainly right to judge of principles from their effects, but then we must know them to be effects of those principles. It is the very method I have observed, with respect to religion and the minute philosophy. And I can honestly aver, that I never knew any man or family grow worse in proportion as they grew religious: but I have often observed, that minute philosophy is the worst thing that can get into a family, the readiest way to impoverish, divide, and dis-

Digitized by Google

grace it. *Alc.* By the same method of tracing causes from their effects, I have made it my observation, that the love of truth, virtue, and the happiness of mankind, are specious pretexts, but not the inward principles, that set divines at work: else why should they affect to abuse human reason, to disparage natural religion, to traduce the philosophers as they universally do? *Cri.* Not so universally perhaps as you imagine. A Christian indeed, is for confining reason within its due bounds; and so is every reasonable man. If we are forbid meddling with unprofitable questions, vain philosophy, and science falsely so called, it cannot be thence inferred, that all inquiries into profitable questions, useful philosophy, and true science, are unlawful. A minute philosopher may indeed impute, and perhaps a weak brother may imagine, those inferences, but men of sense will never make them. God is the common father of lights; and all knowledge really such, whether natural or revealed, is derived from the same source of light and truth. To amass together authorities upon so plain a point would be needless. It must be owned some men's attributing too much to human reason, hath, as is natural, made others attribute too little to it. But thus much is generally acknowledged, that there is a natural religion, which may be discovered and proved by the light of reason, to those who are capable of such proofs. But it must be withal acknowledged, that precepts and oracles from heaven are incomparably better suited to popular improvement and the good of society, than the reasonings of philosophers; and accordingly we do not find, that natural or rational religion ever became the popular national religion of any country.

X. *Alc.* It cannot be denied, that in all heathen countries there have been received, under the colour of religion, a world of fables and superstitious rites. But I question whether they were so absurd and of so bad influence as is vulgarly represented, since their respec-

Digitized by Google

tive legislators and magistrates must, without doubt, have thought them useful. *Cri.* It were needless to inquire into all the rites and notions of the gentile world. This hath been largely done when it was thought necessary. And whoever thinks it worth while may be easily satisfied about them. But as to the tendency and usefulness of the heathen religion in general, I beg leave to mention a remark of St. Augustine's,* who observes that the heathens in their religion had no assemblies for preaching, wherein the people were to be instructed what duties or virtues the gods required, no place or means to be taught what Persius† exhorts them to learn.

> Disciteque o miseri, et causas cognoscite rerum,
> Quid sumus, et quidnam victuri gignimur.—

Alc. This is the true spirit of the party, never to allow a grain of use or goodness to any thing out of their own pale: but we have had learned men who have done justice to the religion of the gentiles. *Cri.* We do not deny but there was something useful in the old religions of Rome and Greece, and some other pagan countries. On the contrary, we freely own they produced some good effects on the people: but then these good effects were owing to the truths contained in those false religions, the truer therefore the more useful. I believe you will find it a hard matter to produce any useful truth, any moral precept, any salutary principle or notion, in any gentile system, either of religion or philosophy, which is not comprehended in the Christian, and either enforced by stronger motives, or supported by better authority, or carried to a higher point of perfection.

XI. Consequently you would have us think ourselves a finer people than the ancient Greeks or Romans. *Cri.* If by finer you mean better, perhaps we are; and if we are not, it is not owing to the Christian religion, but to the want of it. *Alc.* You say perhaps we are. I

* De Civitate Dei, lib. ii. † Sat. iii.

Digitized by Google

do not pique myself on my reading: but should be very ignorant to be capable of being imposed on in so plain a point. What! compare Cicero or Brutus to an English patriot, or Seneca to one of our parsons! Then that invincible constancy and vigour of mind, that disinterested and noble virtue, that adorable public spirit you so much admire, are things in them so well known, and so different from our manners, that I know not how to excuse your *perhaps*. Euphranor, indeed, who passeth his life in this obscure corner, may possibly mistake the characters of our times, but you who know the world, how could you be guilty of such a mistake? *Cri.* O Alciphron, I would by no means detract from the noble virtue of ancient heroes: but I observe those great men were not the minute philosophers of their times; that the best principles upon which they acted are common to them with Christians, of whom it would be no difficult matter to assign many instances, in every kind of worth and virtue, public or private, equal to the most celebrated of the ancients. Though perhaps their story might not have been so well told, set off with such fine lights and colourings of style, or so vulgarly known and considered by every schoolboy. But though it should be granted, that here and there a Greek or Roman genius, bred up under strict laws and severe discipline, animated to public virtue by statues, crowns, triumphal arches, and such rewards and monuments of great actions, might attain to a character and fame beyond other men, yet this will prove only, that they had more spirit, and lived under a civil polity more wisely ordered in certain points than ours; which advantages of nature and civil institution will be no argument for their religion or against ours. On the contrary, it seems an invincible proof of the power and excellency of the Christian religion, that, without the help of those civil institutions and incentives to glory, it should be able to inspire a phlegmatic people with the noblest sentiments, and soften the rugged man-

Digitized by Google

ners of northern boors into gentleness and humanity: and that these good qualities should become national, and rise and fall in proportion to the purity of our religion, as it approaches to, or recedes from, the plan laid down in the gospel.

XII. To make a right judgment of the effects of the Christian religion, let us take a survey of the prevailing notions and manners of this very country where we live, and compare them with those of our heathen predecessors. *Alc.* I have heard much of the glorious light of the gospel, and should be glad to see some effects of it in my own dear country, which, by the by, is one of the most corrupt and profligate upon earth, notwithstanding the boasted purity of our religion. But it would look mean and diffident, to affect a comparison with the barbarous heathen from whence we drew our original: if you would do honour to your religion, dare to make it with the most renowned heathens of antiquity. *Cri.* It is a common prejudice, to despise the present, and overrate remote times and things. Something of this seems to enter into the judgments men make of the Greeks and Romans. For though it must be allowed, those nations produced some noble spirits and great patterns of virtue, yet, upon the whole, it seems to me they were much inferior in point of real virtue and good morals, even to this corrupt and profligate nation, as you are now pleased to call it in dishonour to our religion; however you may think fit to characterize it, when you would do honour to the minute philosophy. This I think, will be plain to any one, who shall turn off his eyes from a few shining characters, to view the general manners and customs of those people. Their insolent treatment of captives, even of the highest rank and softer sex, their unnatural exposing of their own children, their bloody gladiatorian spectacles, compared with the common notions of Englishmen, are to me a plain proof, that our minds are much softened by Christianity. Could any

Digitized by Google

thing be more unjust, than the condemning a young lady to the most infamous punishment and death for the guilt of her father, or a whole family of slaves, perhaps some hundreds, for a crime committed by one? Or more abominable than their bacchanals and unbridled lusts of every kind? which, notwithstanding all that has been done by minute philosophers to debauch the nation, and their successful attempts on some part of it, have not yet been matched among us, at least not in every circumstance of impudence and effrontery. While the Romans were poor, they were temperate; but, as they grew rich, they became luxurious to a degree that is hardly believed or conceived by us. It cannot be denied, the old Roman spirit was a great one. But it as certain, there have been numberless examples of the most resolute and clear courage in Britons, and in general from a religious cause. Upon the whole, it seems an instance of the greatest blindness and ingratitude, that we do not see and own the exceeding great benefits of Christianity, which, to omit higher considerations, hath so visibly softened, polished, and embellished, our manners.

XIII. *Alc.* O Crito! we are alarmed at cruelty in a foreign shape, but overlook it in a familiar one. Else how is it possible that you should not see the inhumanity of that barbarous custom of duelling, a thing avowed and tolerated and even reputable among us? Or that seeing this, you should suppose our Englishmen of a more gentle disposition than the old Romans, who were altogether strangers to it? *Cri.* I will by no means make an apology for every Goth that walks the streets, with a determined purpose to murder any man who shall but spit in his face, or give him the lie. Nor do I think the Christian religion is in the least answerable for a practice so directly opposite to its precepts, and which obtains only among the idle part of the nation, your men of fashion; who, instead of law, reason, or religion, are governed by fashion. Be pleased to consider

Digitized by Google

that what may be, and truly is, a most scandalous reproach to a Christian country, may be none at all to the Christian religion: for the pagan encouraged men in several vices, but the Christian in none. *Alc.* Give me leave to observe, that what you now say is foreign to the purpose. For the question, at present, is not concerning the respective tendencies of the pagan and the Christian religions, but concerning our manners, as actually compared with those of ancient heathens, who I aver that, bad as this is, they had a worse: and that was poisoning. By which we have reason to think there were many more lives destroyed, than by this Gothic crime of duelling: inasmuch as it extended to all ages, sexes, and characters, and as its effects were more secret and unavoidable; and as it had more temptations, interest as well as passion, to recommend it to wicked men. And for the fact, not to waste time, I refer you to the Roman authors themselves. *Lys.* It is very true: duelling is not so general a nuisance as poisoning, nor of so base a nature. This crime, if it be a crime, is in a fair way to keep its ground in spite of the law and the gospel. The clergy never preach against it, because themselves never suffer by it: and the man of honour must not appear against the means of vindicating honour. *Cri.* Though it be remarked by some of your sect, that the clergy are not used to preach against duelling, yet I neither think the remark itself just, nor the reason assigned for it. In effect, one half of their sermons, all that is said of charity, brotherly love, forbearance, meekness, and forgiving injuries, is directly against this wicked custom; by which the clergy themselves are so far from never suffering, that perhaps they will be found, all things considered, to suffer oftener than other men. *Lys.* How do you make this appear? *Cri.* An observer of mankind may remark two kinds of bully, the fighting and the tame, both public nuisances, the former (who is the more dangerous animal, but by much the less common of the two) em-

Digitized by Google

ploys himself wholly and solely against the laity, while the tame species exert their talents upon the clergy. The qualities constituent of this tame bully and natural rudeness joined with a delicate sense of danger. For, you must know, the force of inbred insolence and ill manners is not diminished, though it acquire a new determination, from the fashionable custom of calling men to account for their behaviour. Hence you may often see one of these tame bullies ready to burst with pride and ill humour, which he dares not vent till a parson has come in the way to his relief. And the man of raillery, who would as soon bite off his tongue as break a jest on the profession of arms in the presence of a military man, shall instantly brighten up, and assume a familiar air with religion and the church before ecclesiastics. Dorcon, who passeth for a poltron and stupid in all other company, and really is so, when he is got among clergymen, affects a quite opposite character. And many Dorcons there are, who owe their wit and courage to this passive order.

XIV. *Alc.* But to return to the point in hand, can you deny, the old Romans were as famous for justice and integrity, as men in these days for the contrary qualities? *Cri.* The character of the Romans is not to be taken from the sentiments of Tully, or Cato's actions, or a shining passage here and there in their history, but from the prevailing tenor of their lives and notions. Now if they and our modern Britons are weighed in this same equal balance, you will, if I mistake not, appear to have been prejudiced in favour of the old Romans against your own country, probably because it professeth Christianity. Whatever instances of fraud or injustice may be seen in Christians carry their own censure with them, in the care that is taken to conceal them, and the shame that attends their discovery. There is, even at this day, a sort of modesty in all our public councils and deliberations. And I believe,

Digitized by Google

the boldest of our minute philosophers would hardly undertake, in a popular assembly, to propose any thing parallel to the rape of the Sabines, the most unjust usage of Lucius Tarquinius Collatinus, or the ungrateful treatment of Camillus, which, as a learned father observes, were instances of iniquity agreed to by the public body of the Romans. And if Rome in her early days were capable of such flagrant injustice, it is most certain she did not mend her manner as she grew great in wealth and empire, having produced monsters in every kind of wickedness, as far exceeding other men, as they surpassed them in power. I freely acknowledge, the Christian religion hath not had the same influence upon the nation, that it would in case it had been always professed in its purity, and cordially believed by all men. But I will venture to say, that if you take the Roman history from one end to the other, and impartially compare it with your own, you will neither find them so good, nor your countrymen so bad, as you imagine. On the contrary, an indifferent eye may, I verily think, perceive a vein of charity and justice, the effect of Christian principles, run through the latter; which, though not equally discernible in all parts, yet discloseth itself sufficiently to make a wide difference upon the whole in spite of the general appetites and passions of human nature, as well as of the particular hardness and roughness of the block out of which we were hewn. And it is observable (what the Roman authors themselves do often suggest) that, even their virtues and magnanimous actions rose and fell with a sense of Providence, and a future state, and a philosophy the nearest to the Christian religion.

XV. Crito having spoke thus, paused. But Alciphron, addressing himself to Euphranor and me, said, It is natural for men, according to their several educations and prejudices, to form contrary judgments upon the same things, which they view in very different lights.

Digitized by Google

Crito, for instance, imagines that none but salutary effects proceed from religion: on the other hand, if you appeal to the general experience and observation of other men, you shall find it grown into a proverb that religion is the root of evil.

Tantum religio potuit suadere malorum.

And this not only among Epicureans or other ancient heathens, but among moderns speaking of the Christian religion. Now methinks it is unreasonable to oppose against the general concurring opinion of the world, the observation of a particular person, or particular set of zealots, whose prejudice sticks close to them, and ever mixeth with their judgment; and who read, collect, and observe, with an eye not to discover the truth, but to defend their prejudice. *Cri.* Though I cannot think with Alciphron, yet I must own, I admire his address and dexterity in argument. Popular and general opinion is by him represented, on certain occasions, to be a sure mark of error. But when it serves his ends that it should seem otherwise, he can as easily make it a character of truth. But it will by no means follow, that a profane proverb used by the friends and admired authors of a minute philosopher, must therefore be a received opinion, much less a truth grounded on the experience and observation of mankind. Sadness may spring from guilt or superstition, and rage from bigotry; but darkness might as well be supposed the natural effect of sunshine, as sullen and furious passions to proceed from the glad tidings and Divine precepts of the gospel. What is the sum and substance, scope and end, of Christ's religion, but the love of God and man? to which all other points and duties are relative and subordinate, as parts or means, as signs, principles, motives, or effects. Now I would fain know, how it is possible for evil or wickedness of any kind to spring from such a source? I will not pretend, there are no evil qualities in Christians, nor good in minute philosophers. But

Digitized by Google

this I affirm, that whatever evil is in us, our principles certainly lead to good; and whatever good there may be in you, it is most certain your principles lead to evil.

XVI. *Alc.* It must be owned there is a fair outside, and many plausible things may be said, for the Christian religion taken simply as it lies in the gospel. But it is the observation of one of our great writers, that the first Christian preachers very cunningly began with the fairest face and the best moral doctrines in the world. It was all love, charity, meekness, patience, and so forth. But when by this means they had drawn over the world and got power, they soon changed their appearance, and shewed cruelty, ambition, avarice, and every bad quality. *Cri.* That is to say, some men very cunningly preached and underwent a world of hardships, and laid down their lives to propagate the best principles and the best morals, to the end that others some centuries after might reap the benefit of bad ones. Whoever may be cunning, there is not much cunning in the maker of this observation. *Alc.* And yet ever since this religion hath appeared in the world, we have had eternal feuds, factions, massacres, and wars, the very reverse of that hymn with which it is introduced in the gospel: "Glory be to God on high, on earth peace, good-will towards men." *Cri.* This I will not deny. I will even own that the gospel and the Christian religion have been often the pretext for these evils; but it will not thence follow they were the cause. On the contrary, it is plain they could not be the real proper cause of these evils, because a rebellious, proud, revengeful, quarrelsome spirit, is directly opposite to the whole tenor and most express precepts of Christianity: a point so clear that I shall not prove it. And, secondly, because all those evils you mention were as frequent, nay, much more frequent, before the Christian religion was known in the world. They are the common product of the passions and vices of mankind, which are sometimes covered with the

Digitized by Google

mask of religion by wicked men, having the form of godliness without the power of it. This truth seems so plain, that I am surprised how any man of sense, knowledge, and candour, can make a doubt of it.

XVII. Take but a view of heathen Rome; what a scene is there of faction and fury and civil rage! Let any man consider the perpetual feuds between the patricians and plebeians, the bloody and inhuman factions of Marius and Sylla, Cinna and Octavius, and the vast havoc of mankind, during the two famous triumvirates. To be short, let any man of common candour and common sense but cast an eye, from one end to the other of the Roman story, and behold that long scene of seditions, murders, massacres, proscriptions, and desolations, of every kind, enhanced by every cruel circumstance of rage, rapine, and revenge, and then say, whether those evils were introduced into the world with the Christian religion, or whether they are not less frequent now than before? *Alc.* The ancient Romans, it must be owned, had a high and fierce spirit, which produced eager contentions and very bloody catastrophes. The Greeks, on the other hand, were a polite and gentle sort of men, softened by arts and philosophy. It is impossible to think of the little states and cities of Greece, without wishing to have lived in those times, without admiring their policy and envying their happiness. *Cri.* Men are apt to consider the dark sides of what they possess, and the bright ones of things out of their reach. A fine climate, elegant taste, polite amusements, love of liberty, and a most ingenious inventive spirit for arts and sciences, were indisputable prerogatives of ancient Greece. But as for peace and quietness, gentleness and humanity, I think we have plainly the advantage: for those envied cities composed of gentle Greeks were not without their factions, which persecuted each other with such treachery, rage, and malice, that in respect of them our factious folk are mere lambs. To be convinced of this

Digitized by Google

truth, you need only look into Thucydides,* where you will find those cities in general involved in such bitter factions, as for fellow-citizens without the formalities of war to murder one another, even in their senate-houses and their temples, no regard being had to merit, rank, obligation, or nearness of blood. And if human nature boiled up to so vehement a pitch in the politest people, what wonder that savage nations should scalp, roast, torture, and destroy each other, as they are known to do? It is therefore plain, that without religion there would not be wanting pretexts for quarrels and debates; all which can very easily be accounted for by the natural infirmities and corruption of men. It would not perhaps be so easy to account for the blindness of those, who impute the most hellish effects to the most Divine principle, if they could be supposed in earnest, and to have considered the point. One may daily see ignorant and prejudiced men make the most absurd blunders: but that free-thinkers, divers to the bottom of things, fair inquirers, and openers of eyes, should be capable of such a gross mistake, is what one would not expect.

XVIII. *Alc.* The rest of mankind we could more easily give up: but as for the Greeks, men of the most refined genius express a high esteem of them, not only on account of those qualities which you think fit to allow them, but also for their virtues. *Cri.* I shall not take upon me to say how far some men may be prejudiced against their country, or whether others may not be prejudiced in favour of it. But upon the fullest and most equal observation that I am able to make, it is my opinion, that, if by virtue is meant truth, justice, gratitude, there is incomparably more virtue, now at this day in England, than at any time could be found in ancient Greece. Thus much will be allowed, that we know few countries, if any, where men of eminent worth, and famous for deserving well of the public, met with harder

* Thucyd. lib. iii.

Digitized by Google

fate, and were more ungratefully treated, than in the most polite and learned of the Grecian states. Though Socrates it must be owned would not allow, that those statesmen, by adorning the city, augmenting the fleet, or extending the commerce of Athens, deserved well of their country; or could with justice complain of the ungrateful returns made by their fellow-citizens, whom, while they were in power, they had taken no care to make better men, by improving and cultivating their minds with the principles of virtue, which if they had done, they needed not to have feared their ingratitude. If I were to declare my opinion, what gave the chief advantage to Greeks and Romans and other nations, which have made the greatest figure in the world, I should be apt to think it was a peculiar reverence for their respective laws and institutions, which inspired them with steadiness and courage, and that hearty generous love of their country, by which they did not merely understand a certain language or tribe of men, much less a particular spot of earth, but included a certain system of manners, customs, notions, rites, and laws civil and religious. *Alc.* Oh! I perceive your drift; you would have us reverence the laws and religious institutions of our country. But herein we beg to be excused, if we do not think fit to imitate the Greeks, or to be governed by any authority whatsoever. But to return: as for wars and factions, I grant they ever were and ever will be in the world upon some pretext or other, as long as men are men.

XIX. But there is a sort of war and warriors peculiar to Christendom, which the heathens had no notion of: I mean disputes in theology, and polemical divines, which the world hath been wonderfully pestered with: these teachers of peace, meekness, concord, and what not! if you take their word for it: but, if you cast an eye upon their practice, you find them to have been in all ages the most contentious, quarrelsome, dis-

Digitized by Google

agreeing crew, that ever appeared upon earth. To observe the skill and sophistry, the zeal and eagerness, with which those barbarians the school divines, split hairs and contest about chimeras, gives me more indignation, as being more absurd and a greater scandal to human reason, than all the ambitious intrigues, cabals, and politics, of the court of Rome. *Cri.* If divines are quarrelsome, that is not so far forth as divine, but as undivine and unchristian. Justice is a good thing; and the art of healing is excellent; nevertheless in the administering of justice or physic, men may be wronged or poisoned. But as wrong cannot be justice, or the effect of justice, so poison cannot be medicine, or the effect of medicine; so neither can pride or strife be religion or the effect of religion. Having premised this, I acknowledge, you may often see hot-headed bigots engage themselves in religious as well as civil parties, without being of credit or service to either. And as for the schoolmen in particular, I do not in the least think the Christian religion concerned in the defence of them, their tenets, or their method of handling them: but, whatever futility there may be in their notions, or inelegancy in their language, in pure justice to truth one must own, they neither banter nor rail nor declaim in their writings, and are so far from shewing fury or passion, that perhaps an impartial judge will think, the minute philosophers are by no means to be compared with them, for keeping close to the point, or for temper and good manners. But after all, if men are puzzled, wrangle, talk nonsense, and quarrel about religion, so they do about law, physic, politics, and every thing else of moment. I ask whether in these professions, or in any other, where men have refined and abstracted, they do not run into disputes, chicane, nonsense, and contradictions, as well as in divinity? And yet this doth not hinder but there may be many excellent rules, and just notions, and useful truths, in all those professions.

Digitized by Google

In all disputes human passions too often mix themselves, in proportion as the subject is conceived to be more or less important. But we ought not to confound the cause of men with the cause of God, or make human follies an objection to Divine truths. It is easy to distinguish what looks like wisdom from above, and what proceeds from the passion and weakness of men. This is so clear a point, that one would be tempted to think, the not doing it was an effect, not of ignorance, but of something worse.

XX. The conduct we object to minute philosophers is a natural consequence of their principles. Whatsoever they can reproach us with is an effect, not of our principles, but of human passion and frailty. *Alc.* This is admirable. So we must no longer object to Christians the absurd contentions of councils, the cruelty of inquisitions, the ambition and usurpation of churchmen? *Cri.* You may object them to Christians, but not to Christianity. If the Divine Author of our religion and his disciples have sowed a good seed; and together with this good seed, the enemies of his gospel (among whom are to be reckoned the minute philosophers of all ages) have sowed bad seeds, whence spring tares and thistles? is it not evident, these bad weeds cannot be imputed to the good seed, or to those who sowed it? Whatever you do or can object against ecclesiastical tyranny, usurpation, or sophistry, may, without any blemish or disadvantage to religion, be acknowledged by all true Christians; provided still that you impute those wicked effects to their true cause, not blaming any principles or persons for them, but those that really produce or justify them. Certainly, as the interests of Christianity are not to be supported by unchristian methods, whenever these are made use of, it must be supposed there is some other latent principle which sets them at work. If the very court of Rome hath been known, from motives of policy, to oppose settling the inquisition

Digitized by Google

in a kingdom, where the secular power hath endeavoured to introduce it in spite of that court;* we may well suppose, that elsewhere factions of state, and political views of princes, have given birth to transactions seemingly religious, wherein at bottom neither religion, nor church, nor churchmen, were at all considered. As no man of common sense and honesty will engage in a general defence of ecclesiastics, so I think no man of common candour can condemn them in general. Would you think it reasonable, to blame all statesmen, lawyers, or soldiers, for the faults committed by those of their profession, though in other times, or in other countries, and influenced by other maxims and other discipline? And if not, why do you measure with one rule to the clergy, and another to the laity? Surely the best reason that can be given for this is prejudice. Should any man rake together all the mischiefs that have been committed in all ages and nations, by soldiers and lawyers, you would, I suppose, conclude from thence, not that the state should be deprived of those useful professions, but only that their exorbitances should be guarded against and punished. If you took the same equitable course with the clergy, there would indeed be less to be said against you; but then you would have much less to say. This plain obvious consideration, if every one who read considered, would lessen the credit of your declaimers. *Alc.* But when all is said that can be said, it must move a man's indignation to see reasonable creatures, under the notion of study and learning, employed in reading and writing so many voluminous tracts *de lanâ caprinâ*. *Cri.* I shall not undertake the vindication of theological writings, a general defence being as needless as a general charge is groundless. Only let them speak for themselves: and let no man condemn them upon the word of a minute philosopher. But we will imagine the

* P. Paolo Istoria dell' Inquisitione, p. 42.

Digitized by Google

very worst, and suppose a wrangling pedant in divinity disputes and ruminates and writes upon a refined point, as useless and unintelligible as you please. Suppose this same person bred a laymen, might he not have employed himself in tricking bargains, vexatious law-suits, factions, seditions, and such-like amusements, with much more prejudice to the public? Suffer then curious wits to spin cobwebs; where is the hurt? *Alc.* The mischief is, what men want in light they commonly make up in heat: zeal, and ill nature, being weapons constantly exerted by the partisans, as well as champions, on either side: and those perhaps not mean pedants or book-worms. You shall often see even the learned and eminent divine lay himself out in explaining things inexplicable, or contend for a barren point of theory, as if his life, liberty, or fortune, were at stake. *Cri.* No doubt all points in divinity are not of equal moment. Some may be too finely spun, and others have more stress laid on them than they deserve. Be the subject what it will, you shall often observe that a point, by being controverted, singled out, examined, and nearly inspected, groweth considerable to the same eye, that, perhaps, would have overlooked it in a large and comprehensive view. Nor is it an uncommon thing, to behold ignorance and zeal united in men, who are born with a spirit of party, though the church or religion have in truth but small share in it. Nothing is easier than to make a *caricatura* (as the painters call it) of any profession upon earth: but at bottom, there will be found nothing so strange in all this charge upon the clergy, as the partiality of those who censure them, in supposing the common defects of mankind peculiar to their order, or the effect of religious principles. *Alc.* Other folks may dispute or squabble as they please, and nobody mind them; but it seems, these venerable squabbles of the clergy pass for learning, and interest mankind. To use the words of the most ingenious charac-

Digitized by Google

terizer of our times, "A ring is made, and readers gather in abundance. Every one takes party and encourages his own side. This shall be my champion! This man for my money! Well hit on our side! Again, a good stroke! There he was even with him! Have at him the next 'bout! Excellent sport!"* *Cri.* Methinks I trace the man of quality and breeding in this delicate satire, which so politely ridicules those arguments, answers, defences, and replications, which the press groans under. *Alc.* To the infinite waste of time and paper, and all the while nobody is one whit the wiser. And who indeed can be the wiser for reading books upon subjects quite out of the way, incomprehensible, and most wretchedly written? What man of sense or breeding would not abhor the infection of prolix pulpit eloquence, or of that dry, formal, pedantic, stiff, and clumsy style, which smells of the lamp and the college?

XXI. They who have the weakness to reverence the universities as seats of learning, must needs think this a strange reproach; but it is a very just one. For the most ingenious men are now agreed, that they are only the nurseries of prejudice, corruption, barbarism, and pedantry. *Lys.* For my part, I find no fault with universities. All I know is, that I had the spending of three hundred pounds a year in one of them, and think it the cheerfullest time of my life. As for their books and style I had not leisure to mind them. *Cri.* Whoever hath a mind to weed will never want work; and he that shall pick out bad books on every subject will soon fill his library. I do not know what theological writings Alciphron and his friends may be conversant in; but I will venture to say, one may find among our English divines many writers, who for compass of learning, weight of matter, strength of argument, and purity of style, are not inferior to any in our language. It is not my design to apologize for the universities: whatever is amiss in

* Characteristics, vol. iii. cap. ii.

Digitized by Google

them (and what is there perfect among men?) I heartily wish amended. But I dare affirm, because I know it to be true, that any impartial observer, although they should not come up to what in theory he might wish or imagine, will nevertheless find them much superior to those that in fact are to be found in other countries, and far beyond the mean picture that is drawn of them by minute philosophers. It is natural for those to rail most at places of education, who have profited least by them. Weak and fond parents will also readily impute to a wrong cause, those corruptions themselves have occasioned, by allowing their children more money than they knew how to spend innocently. And too often a gentleman who has been idle at the college, and kept idle company, will judge of a whole university from his own cabal. *Alc.* Crito mistakes the point. I vouch the authority, not of a dunce, or a rake, or absurd parent, but of the most consummate critic this age has produced. This great man characterizeth men of the church and universities with the finest touches and most masterly pencil. What do you think he calls them? *Euph.* What? *Alc.* Why, the black tribe, magicians, formalists, pedants, bearded boys, and having sufficiently derided and exploded them and their mean ungenteel learning, he sets most admirable models of his own for good writing: and it must be acknowledged they are the finest things in our language; as I could easily convince you, for I am never without something of that noble writer about me. *Euph.* He is then a noble writer? *Alc.* I tell you he is a nobleman. *Euph.* But a nobleman who writes is one thing, and a noble writer another. *Alc.* Both characters are coincident, as you may see.

XXII. Upon which Alciphron pulled a treatise out of his pocket, entitled A Soliloquy, or Advice to an Author. Would you behold, said he, looking round upon the company, a noble specimen of fine writing? do but dip

Digitized by Google

into this book: which Crito opening, read verbatim as follows.*

Where then are the pleasures which ambition promises
And love affords? How's the gay world enjoy'd?
Or are those to be esteem'd no pleasures
Which are lost by dulness and inaction?
But indolence is the highest pleasure.
To live and not to feel! To feel no trouble.
What good then? Life itself. And is
This properly to live? Is sleeping life?
Is this what I should study to prolong?
Here the
Fantastic tribe itself seems scandalized.
A civil war begins: the major part
Of the capricious dames do range themselves
On reason's side,
And declare against the languid siren.
Ambition blushes at the offered sweet.
Conceit and Vanity take superior airs.
Ev'n Luxury herself in her polite
And elegant humour reproves th' apostate
Sister.
And marks her as an alien to true pleasure.
Away, thou
Drowsy phantom! haunt me no more; for I
Have learn'd from better than thy sisterhood
That life and happiness consist in action
And employment.
But here a busy form solicits us,
Active, industrious, watchful, and despising
Pains and labour. She wears the serious
Countenance of Virtue, but with features
Of anxiety and disquiet.
What is't she mutters? What looks she on with
Such admiration and astonishment?
Bags! coffers! heaps of shining metal! What?
For the service of Luxury? For her?
These preparations? Art thou then her friend,
Grave Fancy! Is it for her thou toilest?
No, but for provision against want.
But luxury apart, tell me now,

* Part iii. sect. ii.

Digitized by Google

Hast thou not already a competence?
'Tis good to be secure against the fear
Of starving. Is there then no death but this?
No other passage out of life? Are other doors
Secur'd if this be bar'd? Say, Avarice!
Thou emptiest of phantoms, is it not vile
Cowardice thou serv'st? What further have I then
To do with thee (thou doubly vile dependent)
When once I have dismiss'd thy patroness,
And despised her threats?
Thus I contend with fancy and opinion.

Euphranor having heard thus far, cried out, What! will you never have done with your poetry? another time may serve: but why should we break off our conference to read a play? You are mistaken, it is no play nor poetry, replied Alciphron, but a famous modern critic moralizing in prose. You must know this great man hath (to use his own words) revealed a *grand arcanum* to the world, having instructed mankind in what he calls *mirror-writing, self-discoursing practice, and author practice*, and shewed, "that by virtue of an intimate recess, we may discover a certain duplicity of soul, and divide our *self* into two parties, or (as he varies the phrase) practically form the dual number." In consequence whereof, he hath found out that a man may argue with himself, and not only with himself, but also with notions, sentiments, and vices, which by a marvellous prosopopœia he converts into so many ladies, and so converted, he confutes and confounds them in a Divine strain. Can any thing be finer, bolder, or more sublime? *Euph.* It is very wonderful. I thought indeed you had been reading a piece of tragedy. Is this he who despiseth our universities, and sets up for reforming the style and taste of the age? *Alc.* The very same. This is the admired critic of our times. Nothing can stand the test of his correct judgment, which is equally severe to poets and parsons. "The British muses (saith this great man) lisp as in their cradles: and their stammer-

Digitized by Google

ing tongues, which nothing but youth and rawness can excuse, have hitherto spoken in wretched pun and quibble. Our dramatic Shakespear, our Fletcher, Jonson, and our epic Milton, preserve this style. And according to him, even our later authors, aiming at a false sublime, entertain our raw fancy and unpractised ear, which has not yet had leisure to form itself, and become truly musical." *Euph.* Pray what effect may the lessons of this great man, in whose eyes our learned professors are but bearded boys, and our most celebrated wits but wretched punsters, have had upon the public? Hath he rubbed off the college rust, cured the rudeness and rawness of our authors, and reduced them to his own attic standard? Do they aspire to his true sublime, or imitate his chaste unaffected style? *Alc.* Doubtless the taste of the age is much mended: in proof whereof his writings are universally admired. When our author published this treatise, he foresaw the public taste would improve apace; that arts and letters would grow to great perfection; that there would be a happy birth of genius: of all which things he spoke, as he saith himself, in a prophetic style. *Cri.* And yet, notwithstanding the prophetical predictions of this critic, I do not find any science that throve among us of late, so much as the minute philosophy. In this kind, it must be confessed, we have had many notable productions. But whether they are such master-pieces for good writing, I leave to be determined by their readers.

XXIII. In the mean time, I must beg to be excused, if I cannot believe your great man on his bare word; when he would have us think, that ignorance and ill taste are owing to the Christian religion or the clergy, it being my sincere opinion, that whatever learning or knowledge we have among us, is derived from that order. If those, who are so sagacious at discovering a mote in other eyes, would but purge their own, I believe they might easily see this truth. For what but religion

Digitized by Google

could kindle and preserve a spirit towards learning, in such a northern rough people? Greece produced men of active and subtile genius. The public conventions and emulations of their cities forwarded that genius: and their natural curiosity was amused and excited by learned conversations, in their public walks and gardens and porticos. Our genius leads to amusements of a grosser kind: we breathe a grosser and a colder air: and that curiosity which was general in the Athenians, and the gratifying of which was their chief recreation, is among our people of fashion treated like affectation, and as such banished from polite assemblies and places of resort; and without doubt would in a little time be banished the country, if it were not for the great reservoirs of learning, where those formalists, pedants, and bearded boys, as your profound critic calls them, are maintained by the liberality and piety of our predecessors. For it is as evident that religion was the cause of those seminaries, as it is that they are the cause or source of all the learning and taste which are to be found, even in those very men who are the declared enemies of our religion and public foundations. Every one, who knows any thing, knows we are indebted for our learning to the Greek and Latin tongues. This those severe censors will readily grant. Perhaps they may not be so ready to grant, what all men must see, that we are indebted for those tongues to our religion. What else could have made foreign and dead languages in such request among us? What could have kept in being and handed them down to our times, through so many dark ages in which the world was wasted and disfigured by wars and violence? What, but a regard to the Holy Scriptures, and theological writings of the fathers and doctors of the church? And in fact, do we not find that the learning of those times was solely in the hands of ecclesiastics, that they alone lighted the lamp in succession one from another, and transmitted it down to

Digitized by Google

after-ages; and that ancient books were collected and preserved in their colleges and seminaries, when all love and remembrance of polite arts and studies were extinguished among the laity, whose ambition entirely turned to arms?

XXIV. *Alc.* There is, I must needs say, one sort of learning undoubtedly of Christian original, and peculiar to the universities; where our youth spend several years in acquiring that mysterious jargon of scholasticism; than which there could never have been contrived a more effectual method, to perplex and confound human understanding. It is true, gentlemen are untaught by the world what they have been taught at the college: but then their time is doubly lost. *Cri.* But what if this scholastic learning was not of Christian but of Mahometan original, being derived from the Arabs? And what if this grievance of gentlemen's spending several years in learning and unlearning this jargon, be all grimace, and a specimen only of the truth and candour of certain minute philosophers, who raise great invectives from slight occasions, and judge too often without inquiring? Surely it would be no such deplorable loss of time, if a young gentleman spent a few months upon that so much despised and decried art of logic, a surfeit of which is by no means the prevailing nuisance of this age. It is one thing to waste one's time in learning and unlearning the barbarous terms, wire-drawn distinctions, and prolix sophistry, of the schoolmen, and another to attain some exactness in defining and arguing: things perhaps not altogether beneath the dignity even of a minute philosopher. There was indeed a time, when logic was considered as its own object: and that art of reasoning, instead of being transferred to things turned altogether upon words and abstractions; which produced a sort of leprosy in all parts of knowledge, corrupting and converting them into hollow verbal disputations in a most impure dialect. But those

Digitized by Google

times are past; and that, which had been cultivated as the principal learning for some ages, is now considered in another light, and by no means makes that figure in the universities, or bears that part in the studies of young gentlemen educated there, which is pretended by those admirable reformers of religion and learning, the minute philosophers.

XXV. But who were they that encouraged and produced the restoration of arts and polite learning? What share had the minute philosophers in this affair? Matthias Corvinus king of Hungary, Alphonsus king of Naples, Cosmus de Medicis, Picus of Mirandula, and other princes and great men, famous for learning themselves, and for encouraging it in others with a munificent liberality, were neither Turks nor gentiles nor minute philosophers. Who was it that transplanted and revived the Greek language and authors, and with them all polite arts and literature in the west? Was it not chiefly Bessarion a cardinal, Marcus Musurus an archbishop, Theodore Gaza a private clergyman? Has there been a greater and more renowned patron, and restorer of elegant studies in every kind, since the days of Augustus Cæsar, than Leo the Tenth, pope of Rome? Did any writers approach the purity of the classics nearer than the cardinals Bembus and Sadoletus, or than the bishops Jovius and Vida? Not to mention an endless number of ingenious ecclesiastics, who flourished on the other side of the Alps in the golden age (as the Italians call it) of Leo the Tenth, and wrote, both in their own language and the Latin, after the best models of antiquity. It is true, this first recovery of learning preceded the Reformation, and lighted the way to it: but the religious controversies, which ensued, did wonderfully propagate and improve it in all parts of Christendom. And surely, the church of England is, at least, as well calculated for the encouragement of learning as that of Rome. Experience confirms this observation;

Digitized by Google

and I believe the minute philosophers will not be so partial to Rome as to deny it. *Alc.* It is impossible your account of learning beyond the Alps should be true. The noble critic in my hands, having complimented the French, to whom he allows some good authors, asserts of other foreigners, particularly the Italians, "That they may be reckoned no better than the corrupters of true learning and erudition." *Cri.* With some sorts of critics, dogmatical censures and conclusions are not always the result of perfect knowledge or exact inquiry; and if they harangue upon taste, truth of art, a just piece, grace of style, attic elegance, and such topics, they are to be understood only as those that would fain talk themselves into reputation for courage. To hear Thrasymachus speak of resentment, duels, and point of honour, one would think him ready to burst with valour. *Lys.* Whatever merit this writer may have as a demolisher, I always thought he had very little as a builder. It is natural for careless writers to run into faults they never think of: but for an exact and severe critic to shoot his bolt at random, is unpardonable. If he, who professes at every turn a high esteem for polite writing, should yet despise those who most excel in it; one would be tempted to suspect his taste. But if the very man, who of all men talks most about art, and taste, and critical skill, and would be thought to have most considered those points, should often deviate from his own rules, into the false sublime or the *mauvaise plaisanterie*; what reasonable man would follow the taste and judgment of such a guide, or be seduced to climb the steep ascent, or tread in the rugged paths of virtue on his recommendation?

XXVI. *Alc.* But to return, methinks Crito makes no compliment to the genius of his country, in supposing that Englishmen might not have wrought out of themselves, all art and science and good taste, without being beholden to church or universities, or ancient lan-

Digitized by Google

guages. *Cri.* What might have been is only conjecture. What has been, it is not difficult to know. That there is a vein in Britain, of as rich an ore as ever was in any country, I will not deny; but it lies deep, and will cost pains to come at: and extraordinary pains require an extraordinary motive. As for what lies next the surface, it seems but indifferent, being neither so good nor in such plenty as in some other countries. It was the comparison of an ingenious Florentine, that the celebrated poems of Tasso and Ariosto are like two gardens, the one of cucumbers, the other of melons. In the one you shall find few bad, but the best are not a very good fruit; in the other much the greater part are good for nothing, but those that are good are excellent. Perhaps the same comparison may hold, between the English and some of their neighbours. *Alc.* But suppose we should grant that the Christian religion and its seminaries might have been of use, in preserving or retrieving polite arts and letters; what then? Will you make this an argument of its truth? *Cri.* I will make it an argument of prejudice and ingratitude in those minute philosophers, who object darkness, ignorance, and rudeness, as an effect of that very thing, which above all others hath enlightened and civilized and embellished their country: which is as truly indebted to it for arts and sciences (which nothing but religion was ever known to have planted in such a latitude) as for that general sense of virtue and humanity, and the belief of a Providence and future state, which all the argumentation of minute philosophers hath not yet been able to abolish.

XXVII. *Alc.* It is strange you should still persist to argue as if all the gentlemen of our sect were enemies to virtue, and downright atheists: though I have assured you of the contrary, and that we have among us several, who profess themselves in the interests of virtue and natural religion, and have also declared, that I my-

Digitized by Google

self do now argue upon that foot. *Cri.* How can you pretend to be in the interests of natural religion, and yet be professed enemies of the Christian, the only established religion which includes whatever is excellent in the natural, and which is the only means of making those precepts, duties, and notions, so called, become reverenced throughout the world? Would not he be thought weak or insincere, who should go about to persuade people, that he was much in the interests of an earthly monarch; that he loved and admired his government; when at the same time he shewed himself, on all occasions, a most bitter enemy of those very persons and methods, which above all others contributed most to his service, and to make his dignity known and revered, his laws observed, or his dominion extended? And is not this what minute philosophers do, while they set up for advocates of God and religion, and yet do all they can to discredit Christians and their worship? It must be owned, indeed, that you argue against Christianity, as the cause of evil and wickedness in the world; but with such arguments, and in such a manner, as might equally prove the same thing of civil government, of meat and drink, of every faculty and profession, of learning, of eloquence, and even of human reason itself. After all, even those of your sect who allow themselves to be called Deists, if their notions are thoroughly examined, will I fear be found to include little of religion in them. As for the providence of God watching over the conduct of human agents, and dispensing blessings or chastisements, the immortality of the soul, a final judgment, and future state of rewards and punishments; how few, if any of your free-thinkers, have made it their endeavour to possess men's minds with a serious sense of those great points of natural religion! How many, on the contrary, endeavour to render the belief of them doubtful or ridiculous! *Lys.* To speak the truth, I for my part had never any liking to religion of any kind,

Digitized by Google

either revealed or unrevealed: and I dare venture to say the same for those gentlemen of our sect that I am acquainted with, having never observed them guilty of so much meanness, as even to mention the name of God with reverence, or speak with the least regard of piety or any sort of worship. There may perhaps be found one or two formal pretenders to enthusiasm and devotion, in the way of natural religion, who laughed at Christians for publishing hymns and meditations, while they plagued the world with as bad of their own: but the sprightly men make a jest of all this. It seems to us mere pedantry. Sometimes, indeed, in good company, one may hear a word dropped in commendation of honour and good nature: but the former of these, by *connoisseurs*, is always understood to mean nothing but fashion, as the latter is nothing but temper and constitution, which guides a man just as appetite doth a brute.

XXVIII. And after all these arguments and notions, which beget one another without end; to take the matter short, neither I nor my friends for our souls could ever comprehend, why man might not do very well, and govern himself without any religion at all, as well as a brute, which is thought the sillier creature of the two. Have brutes instincts, senses, appetites, and passions, to steer and conduct them? So have men, and reason over and above to consult upon occasion. From these premises we conclude, the road of human life is sufficiently lighted without religion. *Cri.* Brutes having but small power, limited to things present or particular, are sufficiently opposed and kept in order, by the force or faculties of other animals and the skill of man, without conscience or religion: but conscience is a necessary balance to human reason, a faculty of such mighty extent and power, especially towards mischief. Besides, other animals are, by the law of their nature, determined to one certain end or kind of being, without inclination or means

Digitized by Google

either to deviate or go beyond it. But man hath in him a will and higher principle; by virtue whereof he may pursue different or even contrary ends, and either fall short of or exceed the perfection natural to his species in this world, as he is capable either, by giving up the reins to his sensual appetites, of degrading himself into the condition of brutes, or else, by well ordering and improving his mind, of being transformed into the similitude of angels. Man alone of all animals hath understanding to know his God. What availeth this knowledge unless it be to ennoble man, and raise him to an imitation and participation of the Divinity? Or what could such ennoblement avail if to end with this life? Or how can these things take effect without religion? But the points of vice and virtue, man and beast, sense and intellect, have been already at large canvassed. What! Lysicles, would you have us go back where we were three or four days ago? *Lys.* By no means: I had much rather go forward, and make an end as soon as possible. But to save trouble, give me leave to tell you once for all, that, say what you can, you shall never persuade me so many ingenious agreeable men are in the wrong, and a pack of snarling sour bigots in the right.

XXIX. *Cri.* O Lysicles! I neither look for religion among bigots, nor reason among libertines; each kind disgrace their several pretensions; the one owning no regard even to the plainest and most important truths, while the others exert an angry zeal for points of least concern. And surely whatever there is of silly, narrow, and uncharitable, in the bigot, the same is in great measure to be imputed to the conceited ignorance and petulant profaneness of the libertine. And it is not at all unlikely, that as libertines make bigots, so bigots should make libertines, the extreme of one party being ever observed to produce a contrary extreme of another. And although, while these adversaries draw the rope of con-

Digitized by Google

tention, reason and religion are often called upon, yet are they perhaps very little considered or concerned in the contest. Lysicles, instead of answering Crito, turned short upon Alciphron. It was always my opinion, said he, that nothing could be sillier than to think of destroying Christianity, by crying up natural religion. Whoever thinks highly of the one can never, with a consistency, think meanly of the other; it being very evident, thatnatural religion, without revealed, never was and never can be established or received any where, but in the brains of a few idle speculative men. I was aware what your concessions would come to. The belief of a God, virtue, a future state, and such fine notions are, as every one may see with half an eye, the very basis and corner-stone of the Christian religion. Lay but this foundation for them to build on, and you shall soon see what superstructures our men of divinity will raise from it. The truth and importance of those points once admitted, a man need be no conjurer to prove, upon that principle, the excellency and usefulness of the Christian religion: and then to be sure, there must be priests to teach and propagate this useful religion. And if priests, a regular subordination without doubt in this worthy society, and a provision for their maintenance, such as may enable them to perform all their rites and ceremonies with decency, and keep their sacred character above contempt. And the plain consequence of all this is, a confederacy between the prince and the priesthood to subdue the people: so we have let in at once upon us, a long train of ecclesiastical evils, priestcraft, hierarchy, inquisition. We have lost our liberty and property, and put the nation to vast expense, only to purchase bridles and saddles for their own backs.

XXX. This being spoke with some sharpness of tone, and an upbraiding air, touched Alciphron to the quick, who replied nothing, but shewed confusion in his looks.

Digitized by Google

Crito smiling looked at Euphranor and me, then, casting an eye on the two philosophers, spoke as follows: If I may be admitted to interpose good offices, for preventing a rupture between old friends and brethren in opinion, I would observe, that in this charge of Lysicles there is something right and something wrong. It seems right to assert as he doth, that the real belief of natural religion will lead a man to approve of revealed: but it is as wrong to assert, that inquisitions, tyranny, and ruin, must follow from thence. Your free-thinkers, without offence be it said, seem to mistake their talent. They imagine strongly, but reason weakly; mighty at exaggeration, and jejune in argument! Can no method be found, to relieve them from the terror of that fierce and bloody animal an English parson? Will it not suffice to pare his talons without chopping off his fingers? Then they are such wonderful patriots for liberty and property! When I hear these two words in the mouth of a minute philosopher, I am put in mind of the *Teste di Ferro* at Rome. His holiness, it seems, not having power to assign pensions on Spanish benefices to any but natives of Spain, always keeps at Rome two Spaniards, called *Testo di Ferro*, who have the name of all such pensions but not the profit, which goes to Italians. As we may see every day, both things and notions placed to the account of liberty and property, which in reality neither have nor are meant to have any share in them. What! is it impossible for a man to be a Christian, but he must be a slave; or a clergyman, but he must have the principles of an inquisitor? I am far from screening and justifying appetite of domination or tyrannical power in ecclesiastics. Some, who have been guilty in that respect, have sorely paid for it, and it is to be hoped they always will. But having laid the fury and folly of the ambitious prelate, is it not time to look about and spy whether, on the other hand, some evil may not possibly accrue to the state, from the overflowing zeal of an independent

Digitized by Google

whig? This I may affirm, without being at any pains to prove it, that the worst tyranny this nation ever felt was from the hands of patriots of that stamp.

XXXI. *Lys.* I don't know. Tyranny is a harsh word, and sometimes misapplied. When spirited men of independent maxims create a ferment or make a change in the state: he that loseth is apt to consider things in one light, and he that wins in another. In the mean time this is certainly good policy, that we should be frugal of our money, and reserve it for better uses, than to expend on the church and religion. *Cri.* Surely the old apologue of the belly and members need not be repeated to such knowing men. It should seem as needless to observe, that all other states, which ever made any figure in the world for wisdom and politeness, have thought learning deserved encouragement as well as the sword; that grants for religious uses were as fitting as for knights' service; and foundations for propagating piety, as necessary to the public welfare and defence, as either civil or military establishments. But I ask who are at this expense, and what is this expense so much complained of? *Lys.* As if you had never heard of church-lands and tithes. *Cri.* But I would fain know, how they can be charged as an expense, either upon the nation or private men. Where nothing is exported the nation loseth nothing: and it is all one to the public, whether money circulates at home through the hands of a vicar or a squire. Then as for private men, who, for want of thought, are full of complaint about the payment of tithes; can any man justly complain of it as a tax, that he pays what never belonged to him? The tenant rents his farm with this condition, and pays his landlord proportionably less, than if his farm had been exempt from it: so he loseth nothing; it being all one to him, whether he pays his pastor or his landlord. The landlord cannot complain that he has not what he hath no right to, either by grant, purchase, or inheritance. This is the

Digitized by Google

case of tithes; and as for the church-lands, he surely can be no free-thinker, nor any thinker at all, who doth not see that no man, whether noble, gentle, or plebeian, hath any sort of right or claim to them, which he may not with equal justice pretend to all the lands in the kingdom. *Lys.* At present indeed we have no right, and that is our complaint. *Cri.* You would have then what you have no right to? *Lys.* Not so neither: what we would have is first a right conveyed by law, and in the next place, the lands by virtue of such right. *Cri.* In order to this, it might be expedient in the first place, to get an act passed for excommunicating from all civil rights every man, that is a Christian, a scholar, and wears a black coat, as guilty of three capital offences against the public weal of this realm. *Lys.* To deal frankly, I think it would be an excellent good act. It would provide at once for several deserving men, rare artifices in wit and argument and ridicule, who have, too many of them, but small fortunes with a great arrear of merit towards their country, which they have so long enlightened and adorned *gratis*. *Euph.* Pray tell me, Lysicles, are not the clergy legally possessed of their lands and emoluments? *Lys.* Nobody denies it. *Euph.* Have they not been possessed of them from time immemorial? *Lys.* This too I grant. *Euph.* They claim then by law and ancient prescription? *Lys.* They do. *Euph.* Have the oldest families of the nobility a better title? *Lys.* I believe not. It grieves me to see so many overgrown estates in the hands of ancient families, on account of no other merit, but what they brought with them into the world. *Euph.* May you not then as well take their lands too, and bestow them on the minute philosophers, as persons of more merit? *Lys.* So much the better. This enlarges our view, and opens a new scene: it is very delightful, in the contemplation of truth, to behold how one theory grows out of another. *Alc.* Old Pætus used to say, that if the clergy were deprived of their hire, we should lose

Digitized by Google

the most popular argument against them. *Lys.* But so long as men live by religion, there will never be wanting teachers and writers in defence of it. *Cri.* And how can you be sure they would be wanting though they did not live by it; since it is well known Christianity had its defenders even when men died by it? *Lys.* One thing I know, there is a rare nursery of young plants growing up, who have been carefully guarded against every air of prejudice, and sprinkled with the dew of our choicest principles; mean while, wishes are wearisome, and to our infinite regret nothing can be done, so long as there remains any prejudice in favour of old customs and laws and national constitutions, which, at bottom, we very well know and can demonstrate to be only words and notions.

XXXII. But I can never hope, Crito, to make you think my schemes reasonable. We reason each right upon his own principles, and shall never agree till we quit our principles, which cannot be done by reasoning. We all talk of just, and right and wrong, and public good, and all those things. The names may be the same, but the notions and conclusions very different, perhaps diametrically opposite; and yet each may admit of clear proofs, and be inferred by the same way of reasoning. For instance, the gentlemen of the club which I frequent, define man to be a sociable animal: consequently, we exclude from this definition all those human creatures of whom it may be said, we had rather have their room than their company. And such, though wearing the shape of man, are to be esteemed in all account of reason, not as men, but only as human creatures. Hence it plainly follows, that men of pleasure, men of humour, and men of wit, are alone properly and truly to be considered as men. Whatever therefore conduceth to the emolument of such, is for the good of mankind, and consequently very just and lawful, although seeming to be attended with loss or damage to other creatures: inasmuch as no real

Digitized by Google

injury can be done in life or property to those who know not how to enjoy them. This we hold for clear and well-connected reasoning. But others may view things in another light, assign different definitions, draw other inferences, and perhaps consider, what we suppose the very top and flower of the creation, only as a wart or excrescence of human nature. From all which there must ensue a very different system of morals, politics, rights, and notions. *Cri.* If you have a mind to argue, we will argue; if you have more mind to jest, we will laugh with you. *Lys.*

—— Ridentem dicere verum
Quid vetat?

This partition of our kind into men and human creatures, puts me in mind of another notion, broached by one of our club, whom we used to call the Pythagorean.

XXXIII. He made a threefold partition of the human species, into birds, beasts, and fishes, being of opinion that the road of life lies upwards, in a perpetual ascent through the scale of being: in such sort, that the souls of insects after death make their second appearance, in the shape of perfect animals, birds, beasts, or fishes; which upon their death are preferred into human bodies, and in the next stage into beings of a higher and more perfect kind. This man we considered at first as a sort of heretic, because his scheme seemed not to consist with our fundamental tenet, the mortality of the soul: but he justified the notion to be innocent, inasmuch as it included nothing of reward or punishment, and was not proved by any argument, which supposed or implied either incorporeal spirit or Providence, being only inferred, by way of analogy, from what he had observed in human affairs, the court, the church, and the army; wherein the tendency is always upwards from lower posts to higher. According to this system,

Digitized by Google

the fishes are those men who swim in pleasure, such as *petits maitres*, *bons vivans*, and honest fellows. The beasts are dry, drudging, covetous, rapacious folk, and all those addicted to care and business like oxen, and other dry-land animals, which spend their lives in labour and fatigue. The birds are airy notional men, enthusiasts, projectors, philosophers, and such-like: in each species every individual retaining a tincture of his former state, which constitutes what is called genius. If you ask me which species of human creatures I like best, I answer, the flying fish; that is, a man of animal enjoyment with a mixture of whim. Thus you see we have our creeds and our systems, as well as graver folks; with this difference, that they are not strait-laced but sit easy, to be slipped off or on, as humour or occasion serves. And now I can, with the greatest equanimity imaginable, hear my opinions argued against, or confuted.

XXXIV. *Alc.* It were to be wished, all men were of that mind. But you shall find a sort of men, whom I need not name, that cannot bear with the least temper to have their opinions examined or their faults censured. They are against reason, because reason is against them. For our parts we are all for liberty of conscience. If our tenets are absurd, we allow them to be freely argued and inspected; and by parity of reason we might hope to be allowed the same privilege, with respect to the opinions of other men. *Cri.* O Alciphron, wares that will not bear the light are justly to be suspected. Whatever therefore moves you to make this complaint, take my word I never will: but as hitherto I have allowed your reason its full scope, so for the future I always shall. And though I cannot approve of railing or declaiming, not even in myself, whenever you have shewed me the way to it: yet this I will answer for, that you shall ever be allowed to reason as closely and as strenuously as you can. But for the love of truth,

Digitized by Google

be candid, and do not spend your strength and our time, in points of no significancy, or foreign to the purpose, or agreed between us. We allow that tyranny and slavery are bad things: but why should we apprehend them from the clergy at this time? Rites and ceremonies we own are not points of chief moment in religion: but why should we ridicule things in their own nature, at least innocent, and which bear the stamp of supreme authority? That men in divinity, as well as other subjects, are perplexed with useless disputes, and are likely to be so as long as the world lasts I freely acknowledge: but why must all the human weakness and mistakes of clergymen be imputed to wicked designs? Why indiscriminately abuse their character and tenets? Is this like candour, love of truth, and free-thinking? It is granted there may be found, now and then, spleen and ill-breeding in the clergy: but are not the same faults incident to English laymen, of a retired education and country life? I grant there is infinite futility in the schoolmen: but I deny that a volume of that doth so much mischief, as a page of minute philosophy. That weak or wicked men should, by favour of the world, creep into power and high stations in the church, is nothing wonderful: and that in such stations they should behave like themselves, is natural to suppose. But all the while it is evident, that not the gospel but the world, not the spirit but the flesh, not God but the devil, puts them upon their unworthy achievements. We make no difficulty to grant, that nothing is more infamous than vice and ignoranee in a clergyman; nothing more base than a hypocrite, more frivolous than a pedant, more cruel than an inquisitor. But it must be also granted by you, gentlemen, that nothing is more ridiculous and absurd, than for pedantic, ignorant, and corrupt men, to cast the first stone, at every shadow of their own defects and vices in other men.

XXXV. *Alc.* When I consider the detestable state

Digitized by Google

of slavery and superstition, I feel my heart dilate and expand itself to grasp that inestimable blessing of liberty, absolute liberty in its utmost unlimited extent. This is the sacred and high prerogative, the very life and health, of our English constitution. You must not therefore think it strange, if with a vigilant and curious eye, we guard it against the minutest appearance of evil. You must even suffer us to cut round about, and very deep, and make use of the magnifying glass, the better to view and extirpate every the least speck, which shall discover itself in what we are careful and jealous to preserve, as the apple of our eye. *Cri.* As for unbounded liberty I leave it to savages, among whom alone I believe it is to be found: but, for the reasonable legal liberty of our constitution, I most heartily and sincerely wish it may for ever subsist and flourish among us. You and all other Englishmen cannot be too vigilant, or too earnest, to preserve this goodly frame, or to curb and disappoint the wicked ambition of whoever, layman or ecclesiastic, shall attempt to change our free and gentle government into a slavish or severe one. But what pretext can this afford for your attempts against religion, or indeed how can it be consistent with them? Is not the protestant religion a main part of our legal constitution? I remember to have heard a foreigner remark, that we of this island were very good protestants, but no Christians. But whatever minute philosophers may wish, or foreigners say, it is certain our laws speak a different language. *Alc.* This puts me in mind of the wise reasoning of a certain sage magistrate, who, being pressed by the raillery and arguments of an ingenious man, had nothing to say for his religion but that, ten millions of people inhabiting the same island might, whether right or wrong, if they thought good, establish laws for the worshipping of God in their temples, and appealing to him in their courts of justice. And that in case ten thousand ingenious men should publicly de-

Digitized by Google

ride and trample on those laws, it might be just and lawful for the said ten millions, to expel the said ten thousand ingenious men out of their said island. *Euph.* And pray, what answer would you make to this remark of the sage magistrate? *Alc.* The answer is plain. By the law of nature, which is superior to all positive institutions, wit and knowledge have a right to command folly and ignorance. I say, ingenious men have by natural right a dominion over fools. *Euph.* What dominion over the laws and people of Great Britain, minute philosophers may be entitled to by nature, I shall not dispute, but leave to be considered by the public. *Alc.* This doctrine, it must be owned, was never thoroughly understood before our own times. In the last age Hobbes and his followers, though otherwise very great men, declared for the religion of the magistrate, probably because they were afraid of the magistrate; but times are changed, and the magistrates may now be afraid of us. *Cri.* I allow the magistrate may well be afraid of you in one sense, I mean, afraid to trust you. This brings to my thoughts a passage on the trial of Leander for a capital offence: that gentleman having picked out and excluded from his jury, by peremptory exception, all but some men of fashion and pleasure, humbly moved, when Dorcon was going to kiss the book, that he might be required to declare upon honour, whether he believed either God or gospel. Dorcon, rather than hazard his reputation as a man of honour and free-thinker, openly avowed, that he believed in neither. Upon which the court declared him unfit to serve on a jury. By the same reason, so many were set aside as made it necessary to put off the trial. We are very easy, replied Alciphron, about being trusted to serve on juries, if we can be admitted to serve in lucrative employments. *Cri.* But what if the government should enjoin, that every one, before he was sworn into office, should make the same

Digitized by Google

declaration which Dorcon was required to make? *Alc.* God forbid! I hope there is no such design on foot. *Cri.* Whatever designs may be on foot, thus much is certain: the Christian reformed religion is a principal part and corner-stone of our free constitution; and I verily think, the only thing that makes us deserving of freedom, or capable of enjoying it. Freedom is either a blessing or a curse as men use it. And to me it seems, that if our religion were once destroyed from among us, and those notions, which pass for prejudices of a Christian education, erased from the minds of Britons, the best thing that could befal us would be the loss of our freedom. Surely a people wherein there is such restless ambition, such high spirits, such animosity of faction, so great interests in contest, such unbounded licence of speech and press, amidst so much wealth and luxury, nothing but those *veteres aviæ*, which you pretend to extirpate, could have hitherto kept from ruin.

XXXVI. Under the Christian religion this nation hath been greatly improved. From a sort of savages, we have grown civil, polite, and learned: we have made a decent and noble figure both at home and abroad. And, as our religion decreaseth, I am afraid we shall be found to have declined. Why then should we persist in the dangerous experiment? *Alc.* One would think, Crito, you had forgot the many calamities occasioned by churchmen and religion. *Cri.* And one would think, you had forgot what was answered this very day to that objection. But, not to repeat eternally the same things, I shall observe in the first place, that if we reflect on the past state of Christendom, and of our country in particular, with our feuds and factions subsisting while we were all of the same religion, for instance, that of the white and red roses, so violent and bloody and of such long continuance; we can have no assurance that those ill humours, which have since shewn themselves under the mask of religion, would not have broke out with

Digitized by Google

some other pretext, if this had been wanting. I observe in the second place, that it will not follow from any observations you can make on our history, that the evils, accidentally occasioned by religion, bear any proportion either to the good effects it hath really produced, or the evils it hath prevented. Lastly, I observe, that the best things may by accident be the occasion of evil; which accidental effect is not, to speak properly and truly, produced by the good thing itself, but by some evil thing, which, being neither part, property, nor effect of it, happens to be joined with it. But I should be ashamed to insist and enlarge on so plain a point; and shall only add that, whatever evils this nation might have formerly sustained from superstition, no man of common sense will say, the evils felt or apprehended at present are from that quarter. Priestcraft is not the reigning distemper at this day. And surely it will be owned, that a wise man, who takes upon him to be vigilant for the public weal, should touch proper things at proper times, and not prescribe for a surfeit when the distemper is a consumption. *Alc.* I think we have sufficiently discussed the subject of this day's conference. And now, let Lysicles take it as he will, I must in regard to my own character, as a fair impartial adversary, acknowledge there is something in what Crito hath said upon the usefulness of the Christian religion. I will even own to you that some of our sect are for allowing it a toleration. I remember, at a meeting of several ingenious men, after much debate we came successively to divers resolutions. The first was, that no religion ought to be tolerated in the state: but this on more mature thought was judged impracticable. The second was, that all religions should be tolerated, but none countenanced except atheism: but it was apprehended, that this might breed contentions among the lower sort of people. We came therefore to conclude, in the third place, that some religion or other should be established for the use of the vulgar.

Digitized by Google

And after a long dispute what this religion should be, Lysis, a brisk young man, perceiving no signs of agreement, proposed that the present religion might be tolerated, till a better was found. But allowing it to be expedient, I can never think it true, so long as there lie unanswerable objections against it, which, if you please, I shall take the liberty to propose at our next meeting. To which we all agreed.

Digitized by Google

THE SIXTH DIALOGUE.

I. Points agreed. II. Sundry pretences to revelation. III. Uncertainty of tradition. IV. Object and ground of faith. V. Some books disputed, others evidently spurious. VI. Style and composition of Holy Scripture. VII. Difficulties occurring therein. VIII. Obscurity not always a defect. IX. Inspiration neither impossible nor absurd. X. Objections from the form and matter of Divine revelation considered. XI. Infidelity an effect of narrowness and prejudice. XII. Articles of Christian faith not unreasonable. XIII. Guilt the natural parent of fear. XIV. Things unknown reduced to the standard of what men know. XV. Prejudices against the incarnation of the Son of God. XVI. Ignorance of the Divine economy a source of difficulties. XVII. Wisdom of God, foolishness to man. XVIII. Reason, no blind guide. XIX. Usefulness of Divine revelation. XX. Prophecies, whence obscure. XXI. Eastern accounts of time older than the Mosaic. XXII. The humour of Egyptians, Assyrians, Chaldeans, and other nations, extending their antiquity beyond truth, accounted for. XXIII. Reasons confirming the Mosaic account. XXIV. Profane historians inconsistent. XXV. Celsus, Porphyry, and Julian. XXVI. The testimony of Josephus considered. XXVII. Attestation of Jews and Gentiles to Christianity. XXVIII. Forgeries and heresies. XXIX. Judgment and attention of minute philosophers. XXX. Faith and miracles. XXXI. Probable arguments, a sufficient ground of faith. XXXII. The Christian religion able to stand the test of rational inquiry.

I. The following day being Sunday, our philosophers lay long in bed, while the rest of us went to church in the neighbouring town, where we dined at Euphranor's, and after evening service returned to the two philosophers, whom we found in the library. They told us, that, if there was a God, he was present every where, as well as at church; and that if we had been serving him one way, they did not neglect to do as much another; inasmuch as a free exercise of reason must be allowed the most acceptable service and worship, that a rational creature can offer to its Creator. However, said Alciphron, if you, gentlemen, can but solve the diffi-

Digitized by Google

culties which I shall propose to-morrow morning, I promise to go to church next Sunday. After some general conversation of this kind, we sat down to a light supper, and the next morning assembled at the same place as the day before, where being all seated, I observed, that the foregoing week our conferences had been carried on for a longer time, and with less interruption, than I had ever known, or well could be, in town, where men's hours are so broken by visits, business, and amusements, that whoever is content to form his notions from conversation only, must needs have them very shattered and imperfect. And what have we got, replied Alciphron, by all these continued conferences? For my part, I think myself just where I was, with respect to the main point that divides us, the truth of the Christian religion. I answered, That so many points had been examined, discussed, and agreed, between him and his adversaries, that I hoped to see them come to an entire agreement in the end. For in the first place, said I, the principles and opinions of those who are called free-thinkers, or minute philosophers, have been pretty clearly explained. It hath been also agreed, that vice is not of that benefit to the nation which some men imagine: that virtue is highly useful to mankind: but that the beauty of virtue is not alone sufficient to engage them in the practice of it: that therefore the belief of a God and providence ought to be encouraged in the state, and tolerated in good company, as a useful notion. Further, it hath been proved that there is a God: that it is reasonable to worship him: and that the worship, faith, and principles, prescribed by the Christian religion, have a useful tendency. Admit, replied Alciphron, addressing himself to Crito, all that Dion saith to be true: yet this doth not hinder my being just where I was, with respect to the main point. Since there is nothing in all this that proves the truth of the Christian religion: though each of those particulars enumerated may, per-

Digitized by Google

haps, prejudice in its favour. I am therefore to suspect myself at present for a prejudiced person; prejudiced, I say, in favour of Christianity. This, as I am a lover of truth, puts me upon my guard against deception. I must therefore look sharp, and well consider every step I take.

II. *Cri.* You may remember, Alciphron, you proposed for the subject of our present conference, the consideration of certain difficulties and objections, which you had to offer against the Christian religion. We are now ready to hear and consider whatever you shall think fit to produce of that kind. Atheism, and a wrong notion of Christianity, as of something hurtful to mankind, are great prejudices; the removal of which may dispose a man to argue with candour, and submit to reasonable proof: but the removing prejudices against an opinion, is not to be reckoned prejudicing in its favour. It may be hoped therefore, that you will be able to do justice to your cause, without being fond of it. *Alc.* O Crito! that man may thank his stars to whom nature hath given a sublime soul, who can raise himself above popular opinions, and, looking down on the herd of mankind, behold them scattered over the surface of the whole earth, divided and subdivided into numberless nations and tribes, differing in notions and tenets, as in language, manners, and dress. The man who takes a general view of the world and its inhabitants, from this lofty stand, above the reach of prejudice, seems to breathe a purer air, and to see by a clearer light: but how to impart this clear and extensive view to those who are wandering beneath in the narrow dark paths of error! This indeed is a hard task; but hard as it is, I shall try if by any means,

Clara tuæ possim præpandere lumina menti.—LUCRET.

Know then, that all the various casts or sects of the sons of men have each their faith, and their religious system,

Digitized by Google

germinating and sprouting forth from that common grain of enthusiasm, which is an original ingredient in the composition of human nature; they shall each tell of intercourse with the invisible world, revelations from heaven, divine oracles, and the like. All which pretensions, when I regard with an impartial eye, it is impossible I should assent to; and I find within myself something that withholds me from assenting to any of them. For although I may be willing to follow, so fat as common sense and the light of nature lead; yet the same reason that bids me yield to rational proof, forbids me to admit opinions without proof. This holds in general against all revelations whatsoever. And be this my first objection against the Christian in particular. *Cri.* As this objection supposes there is no proof or reason for believing the Christian, if good reason can be assigned for such belief, it comes to nothing. Now I presume you will grant, the authority of the reporter is a true and proper reason for believing reports: and the better this authority, the juster claim it hath to our assent: but the authority of God is on all accounts the best: whatever therefore comes from God, it is most reasonable to believe.

III. *Alc.* This I grant; but then it must be proved to come from God. *Cri.* And yet are not miracles, and the accomplishments of prophecies, joined with the excellency of its doctrine, a sufficient proof that the Christian religion came from God? *Alc.* Miracles, indeed, would prove something: but what proof have we of these miracles? *Cri.* Proof of the same kind that we have or can have of any facts done a great way off, and a long time ago. We have authentic accounts transmitted down to us from eye-witnesses, whom we cannot conceive tempted to impose upon us by any human motive whatsoever; inasmuch as they acted therein contrary to their interests, their prejudices, and the very principles in which they had been nursed and educated.

Digitized by Google

These accounts were confirmed by the unparalleled subversion of the city of Jerusalem, and the dispersion of the Jewish nation, which is a standing testimony to the truth of the gospel, particularly of the predictions of our blessed Saviour. These accounts, within less than a century, were spread throughout the world, and believed by great numbers of people. These same accounts were committed to writing, translated into several languages, and handed down with the same respect and consent of Christians in the most distant churches. Do you not see, said Alciphron, staring full at Crito, that all this hangs by tradition? And tradition, take my word for it, gives but a weak hold: it is a chain, whereof the first links may be stronger than steel, and yet the last weak as wax, and as brittle as glass. Imagine a picture copied successively by a hundred painters, one from another; how like must the last copy be to the original! How lively and distinct will an image be, after a hundred reflections between two parallel mirrors! Thus like and thus lively do I think a faint vanishing tradition, at the end of sixteen or seventeen hundred years. Some men have a false heart, others a wrong head; and where both are true, the memory may be treacherous. Hence there is still something added, something omitted, and something varied from the truth; and the sum of many such additions, deductions, and alterations, accumulated for several ages, do, at the foot of the account, make quite another thing. *Cri.* Ancient facts we may know by tradition, oral or written: and this latter we may divide into two kinds, private and public, as writings are kept in the hands of particular men, or recorded in public archives. Now all these three sorts of tradition, for aught I can see, concur to attest the genuine antiquity of the gospels. And they are strengthened by collateral evidence from rites instituted, festivals observed, and monuments erected, by ancient Christians, such as churches, baptisteries, and sepulchres. Now

Digitized by Google

allowing your objection holds against oral tradition, singly taken, yet I can think it no such difficult thing to transcribe faithfully. And things once committed to writing, are secure from slips of memory, and may with common care be preserved entire so long as the manuscript lasts: and this experience shews may be above two thousand years. The Alexandrine manuscript is allowed to be above twelve hundred years old; and it is highly probable there were then extant copies four hundred years old. A tradition therefore of above sixteen hundred years old, need have only two or three links in its chain, and these links, notwithstanding that great length of time, may be very sound and entire. Since no reasonable man will deny, that an ancient manuscript may be of much the same credit now as when it was first written. We have it on good authority, and it seems probable, that the primitive Christians were careful to transcribe copies of the gospels and epistles for their private use, and that other copies were preserved as public records, in the several churches throughout the world, and that portions thereof were constantly read in their assemblies. Can more be said to prove the writings of classic authors, or ancient records of any kind, authentic? Alciphron, addressing his discourse to Euphranor, said, It is one thing to silence an adversary, and another to convince him. What do you think, Euphranor? *Euph.* Doubtless, it is. *Alc.* But what I want is to be convinced. *Euph.* That point is not so clear. *Alc.* But if a man had ever so much mind, he cannot be convinced by probable arguments against demonstration. *Euph.* I grant he cannot.

IV. *Alc.* Now it is as evident as demonstration can make it, that no Divine faith can possibly be built upon tradition. Suppose an honest credulous countryman, catechised and lectured every Sunday by his parish-priest: it is plain he believes in the parson, and not in God. He knows nothing of revelations, and doctrines,

Digitized by Google

and miracles, but what the priest tells him. This he believes, and this faith is purely human. If you say, he has the Liturgy and the Bible for the foundation of his faith, the difficulty still recurs. For as to the Liturgy, he pins his faith upon the civil magistrate, as well as the ecclesiastic: neither of which can pretend Divine inspiration. Then for the Bible, he takes both that and his Prayer-book on trust from the printer, who, he believes, made true editions from true copies. You see then faith, but what faith? faith in the priest, in the magistrate, in the printer, editor, transcriber, none of which can with any pretence be called Divine. I had the hint from Cratylus; it is a shaft out of his quiver, and, believe me, a keen one. *Euph.* Let me take and make trial of this same shift in my hands. Suppose then your countryman hears a magistrate declare the law from the bench, or suppose he reads it in a statute-book. What think you, is the printer or the justice the true and proper object of his faith and submission? Or do you acknowledge a higher authority whereon to found those loyal acts, and in which they do really terminate? Again, suppose you read a passage in Tacitus that you believe true; would you say you assented to it on the authority of the printer or transcriber rather than the historian? *Alc.* Perhaps I would, and perhaps I would not. I do not think myself obliged to answer these points. What is this but transferring the question from one subject to another? That which we considered was neither law nor profane history, but religious tradition, and Divine faith. I see plainly what you aim at, but shall never take for an answer to one difficulty, the starting of another. *Cri.* O Alciphron! there is no taking hold of you, who expect that others should (as you were pleased to express it) hold fair and stand firm, while you plucked out their prejudices: how shall he argue with you, but from your concessions; and how can he know what you grant, except you will be pleased to tell him? *Euph.*

Digitized by Google

But to save you the trouble, for once I will suppose an answer. My question admits but of two answers; take your choice. From the one it will follow, that, by a parity of reason, we can easily conceive, how a man may have Divine faith, though he never felt inspiration or saw a miracle: inasmuch as it is equally possible for the mind, through whatever conduit, oral or scriptural, Divine revelation be derived, to carry its thoughts and submission up to the source, and terminate its faith, not in human, but Divine authority: not in the instrument or vessel of conveyance, but in the great origin itself as its proper and true object. From the other answer it will follow, that you introduce a general scepticism into human knowledge, and break down the hinges on which civil government, and all the affairs of the world, turn and depend: in a word, that you would destroy human faith to get rid of Divine. And how this agrees with your professing that you want to be convinced I leave you to consider.

V. *Alc.* I should in earnest be glad to be convinced one way or other, and come to some conclusion. But I have so many objections in store, you are not to count much upon getting over one. Depend on it you shall find me behave like a gentleman and lover of truth. I will propose my objections briefly and plainly, and accept of reasonable answers as fast as you can give them. Come, Euphranor, make the most of your tradition; you can never make that a constant and universal one, which is acknowledged to have been unknown, or at best disputed, in the church for several ages: and this is the case of the canon of the New Testament. For though we have now a canon as they call it settled, yet every one must see and own that tradition cannot grow stronger by age; and that what was uncertain in the primitive times cannot be undoubted in the subsequent. What say you to this, Euphranor? *Euph.* I should be glad to conceive your meaning clearly before I return an answer. It seems to me this objection of yours sup-

Digitized by Google

poseth, that where a tradition hath been constant and undisputed, such tradition may be admitted as a proof, but that where the tradition is defective, the proof must be so too. Is this your meaning? *Alc.* It is. *Euph.* Consequently the gospels and epistles of St. Paul, which were universally received in the beginning, and never since doubted of by the church, must, notwithstanding this objection, be in reason admitted for genuine. And if these books contain, as they really do, all those points that come into controversy between you and me; what need I dispute with you about the authority of some other books of the New Testament, which came later to be generally known and received in the church? If a man assents to the undisputed books, he is no longer an infidel; though he should not hold the Revelations, or the Epistle to St. James or Jude, or the latter of St. Peter, or the two last of St. John to be canonical. The additional authority of these portions of Holy Scripture may have its weight, in particular controversies between Christians, but can add nothing to arguments against an infidel as such. Wherefore though I believe good reasons may be assigned for receiving these books, yet these reasons seem now beside our purpose. When you are a Christian it will be then time enough to argue this point. And you will be the nearer being so, if the way be shortened by omitting it for the present. *Alc.* Not so near neither as you perhaps imagine: fear, notwithstanding all the fair and plausible things you may say about tradition, when I consider the spirit of forgery which reigned in the primitive times, and reflect on the several gospels, acts, and epistles, attributed to the apostles, which yet are acknowledged to be spurious, I confess, I cannot help suspecting the whole. *Euph.* Tell me, Alciphron, do you suspect all Plato's writings for spurious, because the Dialogue upon Death, for instance, is allowed to be so? Or will you admit none of Tully's writings to be genuine;

Digitized by Google

because Sigonius imposed a book of his own writing for Tully's treatise De Consolatione, and the imposture passed for some time on the world? *Alc.* Suppose I admit for the works of Tully and Plato those that commonly pass for such. What then? *Euph.* Why then I would fain know, whether it be equal and impartial in a free-thinker, to measure the credibility of profane and sacred books by a different rule. Let us know upon what foot we Christians are to argue with minute philosophers; whether we may be allowed the benefit of common maxims in logic and criticism? If we may, be pleased to assign a reason why supposititious writings, which in the style and manner and matter bear visible marks of imposture, and have accordingly been rejected by the church, can be made an argument against those which have been universally received, and handed down by a unanimous constant tradition. There have been in all great societies of men many capricious, vain, or wicked impostors, who for different ends have abused the world by spurious writings, and created work for critics both in profane and sacred learning. And it would seem as silly to reject the true writings of profane authors for the sake of the spurious, as it would seem unreasonable to suppose, that among the heretics and several sects of Christians, there should be none capable of the like imposture.

VI. *Alc.* But, be the tradition ever so well attested, and the books ever so genuine, yet I cannot suppose them wrote by persons divinely inspired, so long as I see in them certain characters inconsistent with such a supposition. Surely the purest language, the most perfect style, the exactest method, and in a word all the excellences of good writing, might be expected in a piece composed or dictated by the Spirit of God: but books, wherein we find the reverse of all this, it were impious, not to reject, but to attribute to the Divinity. *Euph.* Say, Alciphron, are the lakes, the rivers, or the ocean, bounded by straight lines? Are the hills and moun-

Digitized by Google

tains exact cones or pyramids? Or the stars cast into regular figures? *Alc.* They are not. *Euph.* But in the works of insects, we may observe figures as exact as if they were drawn by the rule and compass. *Alc.* We may. *Euph.* Should it not seem therefore that a regular exactness, or scrupulous attention to what men call the rules of art, is not observed in the great productions of the Author of nature? *Alc.* It should. *Euph.* And when a great prince declareth his will in laws and edicts to his subjects, is he careful about a pure style or elegant composition? Does he not leave his secretaries and clerks to express his sense in their own words? Is not the phrase on such occasions thought proper if it conveys as much as was intended? And would not the Divine strain of certain modern critics be judged affected and improper for such uses? *Alc.* It must be owned, laws, and edicts, and grants, for solecism and tautology, are very offensive to the harmonious ears of a fine writer. *Euph.* Why then should we expect in the oracles of God an exactness, that would be misbecoming, and beneath the dignity of an earthly monarch, and which bears no proportion or resemblance to the magnificent works of the creation? *Alc.* But granting that a nice regard to particles and critical rules is a thing too little and mean to be expected in Divine revelations; and that there is more force and spirit and true greatness in a negligent unequal style, than in the well-turned periods of a polite writer; yet what is all this to the bald and flat compositions of those you call the Divine penmen? I can never be persuaded, the supreme Being would pick out the poorest and meanest of scribblers for his secretaries. *Euph.* O Alciphron! if I durst follow my own judgment, I should be apt to think there are noble beauties in the style of the Holy Scripture: in the narrative parts a strain so simple and unaffected; in the devotional and prophetic, so animated and sublime: and in the doctrinal parts such an air of dignity and authority as

Digitized by Google

seems to speak their original Divine. But I shall not enter into a dispute about taste; much less set up my judgment on so nice a point against that of the wits, and men of genius, with which your sect abounds. And I have no temptation to it, inasmuch as it seems to me, the oracles of God are not the less so for being delivered in a plain dress, rather than in "the enticing words of man's wisdom." *Alc.* This may perhaps be an apology for some simplicity and negligence in writing.

VII. But what apology can be made for nonsense, crude nonsense? of which I could easily assign many instances, having once in my life read the Scripture through with that very view. Look here, said he, opening a Bible, in the forty-ninth psalm, the author begins magnificently, calling upon all the inhabitants of the earth to give ear, and assuring them his mouth shall speak of wisdom, and the meditation of his heart shall be of understanding.

Quid dignum tanto feret hic promissor hiatu?

He hath no sooner done with his preface, but he puts this senseless question, "Wherefore should I fear in the days of evil; when the wickedness of my heels shall compass me about?" The iniquity of my heels! What nonsense after such a solemn introduction! *Euph.* For my own part, I have naturally weak eyes, and know there are many things that I cannot see, which are nevertheless distinctly seen by others. I do not therefore conclude a thing to be absolutely invisible, because it is so to me: and since it is possible it may be with my understanding as it is with my eyes, I dare not pronounce a thing to be nonsense, because I do not understand it. Of this passage many interpretations are given. The word rendered heels may signify fraud or supplantation: by some it is translated past wickedness, the heel being the hinder part of the foot; by others iniquity in the end of my days, the heel being one extremity of the

Digitized by Google

body; by some the iniquity of my enemies that may supplant me; by others my own faults or iniquities which I have passed over as light matters, and trampled under my feet. Some render it, the iniquity of my ways; others, my transgressions which are like slips and slidings of the heel: and after all might not this expression, so harsh and odd to English ears, have been very natural and obvious in the Hebrew tongue, which, as every other language, had its idioms? the force and propriety whereof may as easily be conceived lost in a long tract of time, as the signification of some Hebrew words, which are not now intelligible, though nobody doubts but they had once a meaning as well as the other words of that language. Granting therefore that certain passages in the Holy Scripture may not be understood, it will not thence follow that its penman wrote nonsense? for I conceive nonsense to be one thing, and unintelligible another. *Cri.* An English gentleman of my acquaintance one day entertaining some foreigners at his house, sent a servant to know the occasion of a sudden tumult in the yard, who brought him word, the horses were fallen together by the ears: his guests inquiring what the matter was, he translates it literally, *Les chevaux sont tombez ensemble par les oreilles*: which made them stare; what expressed a very plain sense in the original English, being incomprehensible when rendered word for word into French: and I remember to have heard a man excuse the bulls of his countrymen, by supposing them so many literal translations. *Euph.* But not to grow tedious, I refer to the critics and commentators, where you will find the use of this remark, which clearing up several obscure passages you take for nonsense, may possibly incline you to suspect your own judgment of the rest. In this very psalm you have pitched on, the good sense and moral contained in what follows, should, methinks, make a candid reader judge favourably of the original sense of the author, in that part which he could not understand.

Digitized by Google

Say, Alciphron, in reading the classics, do you forthwith conclude every passage to be nonsense, that you cannot make sense of? *Alc.* By no means; difficulties must be supposed to rise from different idioms, old customs, hints, and allusions, clear in one time or place, and obscure in another. *Euph.* And why will you not judge of Scripture by the same rule? These sources of obscurity you mention are all common both to sacred and profane writings: and there is no doubt, but an exacter knowledge in language and circumstances would in both cause difficulties to vanish like shades before the light of the sun. Jeremiah to describe a furious invader saith, "Behold, he shall come up as a lion from the swelling of Jordan against the habitation of the strong." One would be apt to think this passage odd and improper, and that it had been more reasonable to have said, a lion from the mountain or the desert. But travellers, as an ingenious man observes, who have seen the river Jordan bounded by low lands with many reeds or thickets affording shelter to wild beasts (which being suddenly dislodged by a rapid overflowing of the river, rush into the upland country), perceive the force and propriety of the comparison; and that the difficulty proceeds, not from nonsense in the writer, but from ignorance in the reader. It is needless to amass together instances which may be found in every commentator: I only beg leave to observe, that sometimes men, looking higher or deeper than they need for a profound or remote sense, overlook the natural obvious sense, lying, if I may so say, at their feet, and so make difficulties instead of finding them. This seems to be the case of that celebrated passage, which hath created so much work in St. Paul's First Epistle to the Corinthians. "What shall they do which are baptised for the dead, if the dead rise not at all? Why are they then baptized for the dead?" I remember to have heard this text explained by Laches the vicar of our parish to my neighbour Lycon, who was much per-

Digitized by Google

plexed about its meaning. If it had been translated, as it might very justly, baptised for the sake of the dead, I do not see, said Laches, why people should be puzzled about the sense of this passage; for tell me, I beseech you, for whose sake do you think those Christians were baptized? For whose sake, answered Lycon, but their own? How do you mean, for their own sake in this life, or the next? Doubtless, in the next, for it was plain they could get nothing by it in this. They were then, replied Laches, baptized not for the sake of themselves while living, but for the sake of themselves when dead; not for the living, but the dead? I grant it. Baptism therefore must have been to them a fruitless thing, if the dead rise not at all? It must. Whence Laches inferred, that St. Paul's argument was clear and pertinent for the resurrection: and Lycon allowed it to be *argumentum od hominem* to those who had sought baptism. There is then, concluded Laches, no necessity for supposing, that living men were in those days baptized instead of those who died without baptism, or of running into any other odd suppositions, or strained and far-fetched interpretations to make sense of this passage. *Alc.* Here and there a difficult passage may be cleared: but there are many which no art or wit of man can account for. What say you to those discoveries, made by some of our learned writers, of false citations from the Old Testament found in the gospel? *Euph.* That some few passages are cited by the writers of the New Testament out of the Old, and by the fathers out of the New, which are not in so many words to be found in them, is no new discovery of minute philosophers, but known and observed long before by Christian writers; who have made no scruple to grant, that some things might have been inserted by careless or mistaken transcribers into the text, from the margin, others left out, and others altered; whence so many various readings. But these are things of small moment, and that all other ancient authors have

Digitized by Google

been subject to; and upon which no point of doctrine depends which may not be proved without them. Nay, further, if it be any advantage to your cause, it hath been observed, that the 18th psalm as recited in 2 Sam. xxii. varies in about forty places, if you regard every little verbal or literal difference: and that a critic may now and then discover small variations, is what nobody can deny. But to make the most of these concessions, what can you infer from them, more than that the design of the Holy Scripture was not to make us exactly knowing in circumstantials? and that the Spirit did not dictate every particle and syllable, or preserve them from every minute alteration by miracle? which to believe, would look like rabinical superstition. *Alc.* But what marks of Divinity can possibly be in writings which do not reach the exactness even of human art? *Euph.* I never thought nor expected that the Holy Scripture should shew itself Divine, by a circumstantial accuracy of narration, by exactness of method, by strictly observing the rules of rhetoric, grammar, and criticism, in harmonious periods, in elegant and choice expressions, or in technical definitions and partitions. These things would look too like a human composition. Methinks there is in that simple, unaffected, artless, unequal, bold, figurative style of the Holy Scripture, a character singularly great and majestic, and that looks more like Divine inspiration, than any other composition that I know. But, as I said before, I shall not dispute a point of criticism with the gentlemen of your sect, who, it seems, are the modern standard for wit and taste. *Alc.* Well, I shall not insist on small slips, or the inaccuracy of citing or transcribing: and I freely own, that repetitions, want of method, or want of exactness in circumstances, are not the things that chiefly stick with me; no more than the plain patriarchal manners, or the peculiar usages and customs of the Jews and first Christians so different from ours; and that to reject the Scripture on such accounts would be to act

Digitized by Google

like those French wits, who censure Homer because they do not find in him the style, notions, and manners, of their own age and country. Was there nothing else to divide us, I should make no great difficulty of owning, that a popular incorrect style might answer the general ends of revelation, as well perhaps as a more critical and exact one: but the obscurity still sticks with me. Methinks if the supreme Being had spoke to man, he would have spoke clearly to him, and that the word of God should not need a comment.

VIII. *Euph.* You seem, Alciphron, to think obscurity a defect; but if it should prove to be no defect, there would then be no force in this objection. *Alc.* I grant there would not. *Euph.* Pray tell me, are not speech and style instrumental to convey thoughts and notions, to beget knowledge, opinion, and assent? *Alc.* This is true. *Euph.* And is not the perfection of an instrument to be measured by the use to which it is subservient? *Alc.* It is. *Euph.* What therefore is a defect in one instrument, may be none in another. For instance, edged tools are in general designed to cut; but the uses of an axe and a razor being different, it is no defect in an axe, that it hath not the keen edge of a razor; nor in a razor, that it hath not the weight or strength of an axe. *Alc.* I acknowledge this to be true. *Euph.* And may we not say in general, that every instrument is perfect, which answers the purpose or intention of him who useth it? *Alc.* We may. *Euph.* Hence it seems to follow, that no man's speech is defective in point of clearness, though it should not be intelligible to all men, if it be sufficiently so to those who he intended should understand it; or though it should not in all parts be equally clear, or convey a perfect knowledge, where he intended only an imperfect hint. *Alc.* It seems so. *Euph.* Ought we not therefore to know the intention of the speaker, to be able to know whether his style be obscure through defect or

Digitized by Google

design? *Alc.* We ought. *Euph.* But is it possible for man to know all the ends and purposes of God's revelations? *Alc.* It is not. *Euph.* How then can you tell, but the obscurity of some parts of Scripture may well consist with the purpose which you know not, and consequently be no argument against its coming from God? The books of Holy Scripture were written in ancient languages, at distant times, on sundry occasions, and very different subjects: is it not therefore reasonable to imagine, that some parts or passages might have been clearly enough understood by those, for whose proper use they were principally designed, and yet seem obscure to us, who speak another language, and live in other times? Is it at all absurd or unsuitable to the notion we have of God or man, to suppose that God may reveal, and yet reveal with a reserve, upon certain remote and sublime subjects, content to give us hints and glimpses, rather than views? May we not also suppose, from the reason of things and the analogy of nature, that some points, which might otherwise have been more clearly explained, were left obscure merely to encourage our diligence and modesty? Two virtues, which, if it might not seem disrespectful to such great men, I would recommend to the minute philosophers. Lysicles replied, This indeed is excellent! you expect that men of sense and spirit should in great humility put out their eyes, and blindly swallow all the absurdities and nonsense that shall be offered to them for Divine revelation? *Euph.* On the contrary, I would have them open their eyes, look sharply, and try the spirit, whether it is of God; and not supinely and ignorantly condemn in the gross, all religions together, piety with superstition, truth for the sake of error, matters of fact for the sake of fictions; a conduct which at first sight would seem absurd in history, physic, or any other branch of human inquiry: but to compare the Christian system, or Holy Scriptures, with other pretences to

Digitized by Google

Divine revelation, to consider impartially the doctrines, precepts, and events, therein contained; weigh them in the balance with any other religious, natural, moral, or historical accounts; and diligently to examine all those proofs internal and external, that for so many ages have been able to influence and persuade so many wise, learned, and inquisitive men: perhaps they might find in it certain peculiar characters, which sufficiently distinguish it from all other religions and pretended revelations, whereon to ground a reasonable faith. In which case I leave them to consider, whether it would be right to reject with peremptory scorn a revelation so distinguished and attested, upon account of obscurity in some parts of it? and whether it would seem beneath men of their sense and spirit to acknowledge, that, for aught they know, a light inadequate to things, may yet be adequate to the purpose of Providence? and whether it might be unbecoming their sagacity and critical skill to own, that literal translations from books in an ancient oriental tongue, wherein there are so many peculiarities, as to the manner of writing, the figures of speech, and structure of the phrase, so remote from all our modern idioms, and in which we have no other coeval writings extant, might well be obscure in many places, especially such as treat of subjects sublime and difficult in their own nature, or allude to things, customs, or events, very distant from our knowledge? And lastly, whether it might not become their character, as impartial and unprejudiced men, to consider the Bible in the same light they would profane authors? They are apt to make great allowance for transpositions, omissions, and literal errors of transcribers in other ancient books, and very great for the difference of style and manner, especially in eastern writings, such as the remains of Zoroaster and Confucius, and why not in the prophets? In reading Horace or Persius to make out the sense, they will be at the pains to discover a hidden drama, and why not in

Digitized by Google

Solomon or St. Paul? I hear there are certain ingenious men who despise King David's poetry, and yet propose to admire Homer and Pindar. If there be no prejudice or affectation in this, let them but make a literal version from those authors into English prose, and they will then be better able to judge of the Psalms. *Alc.* You may discourse and expatiate; but notwithstanding all you have said or shall say, it is a clear point that a revelation, which doth not reveal, can be no better than a contradiction in terms. *Euph.* Tell me, Alciphron, do you not acknowledge the light of the sun to be the most glorious production of Providence in this natural world? *Alc.* Suppose I do? *Euph.* This light, nevertheless, which you cannot deny to be of God's making, shines only on the surface of things, shines not at all in the night, shines imperfectly in the twilight, is often interrupted, refracted, and obscured, represents distant things and small things dubiously, imperfectly, or not at all. Is this true or no? *Alc.* It is. *Euph.* Should it not follow therefore, that to expect in this world a light from God without any mixture of shade or mystery, would be departing from the rule and analogy of the creation? and that consequently it is no argument the light of revelation is not Divine, because it may not be so clear and full as you expect? *Alc.* As I profess myself candid and indifferent throughout this debate, I must needs own you say some plausible things, as a man of argument will never fail to do in vindication of his prejudices.

IX. But, to deal plainly, I must tell you once for all, that you may question and answer, illustrate and enlarge, for ever, without being able to convince me that the Christian is of Divine revelation. I have said several things, and have many more to say, which, believe me, have weight not only with myself, but with many great men my very good friends, and will have weight whatever Euphranor can say to the contrary. *Euph.* O Al-

Digitized by Google

ciphron! I envy you the happiness of such acquaintance. But, as my lot, fallen in this remote corner, deprives me of that advantage, I am obliged to make the most of this opportunity, which you and Lysicles have put into my hands. I consider you as two able chirurgeons, and you were pleased to consider me as a patient, whose cure you have generously undertaken. Now a patient must have full liberty to explain his case, and tell all his symptoms, the concealing or palliating of which might prevent a perfect cure. You will be pleased therefore to understand me, not as objecting to, or arguing against, either your skill or medicines, but only as setting forth my own case and the effects they have upon me. Say, Alciphron, did you not give me to understand that you would extirpate my prejudices? *Alc.* It is true: a good physician eradicates every fibre of the disease. Come, you shall have a patient hearing. *Euph.* Pray, was it not the opinion of Plato, that God inspired particular men, as organs or trumpets, to proclaim and sound forth his oracles to the world?* And was not the same opinion also embraced by others the greatest writers of antiquity? *Cri.* Socrates seems to have thought that all true poets spoke by inspiration; and Tully, that there was no extraordinary genius without it. This hath made some of our affected free-thinkers attempt to pass themselves upon the world for enthusiasts. *Alc.* What would you infer from all this? *Euph.* I would infer that inspiration should seem nothing impossible or absurd, but rather agreeable to the light of reason and the notions of mankind. And this, I suppose, you will acknowledge, having made it an objection against a particular revelation, that there are so many pretences to it throughout the world. *Alc.* O Euphranor! he who looks into the bottom of things, and resolves them into their first principles, is not easily amused with words. The word *inspiration* sounds indeed big;

* Plato in Ione.

Digitized by Google

but let us, if you please, take an original view of the thing signified by it. To inspire is a word borrowed from the Latin, and strictly taken means no more than to breathe or blow in: nothing therefore can be inspired but what can be blown or breathed, and nothing can be so but wind or vapour, which indeed may fill or puff up men with fanatical and hypochondriacal ravings. This sort of inspiration I very readily admit. *Euph.* What you say is subtle, and I know not what effect it might have upon me, if your profound discourse did not hinder its own operation. *Alc.* How so? *Euph.* Tell me, Alciphron, do you discourse or do you not? To me it seems that you discourse admirably. *Alc.* Be that as it will, it is certain I discourse. *Euph.* But when I endeavour to look into the bottom of things, behold! a scruple riseth in my mind how this can be; for to *discourse* is a word of Latin derivation, which originally signifies to run about; and a man cannot run about, but he must change place and move his legs; so long therefore as you sit on this bench, you cannot be said to discourse. Solve me this difficulty, and then perhaps I may be able to solve yours. *Alc.* You are to know, that discourse is a word borrowed from sensible things, to express an invisible action of the mind, reasoning or inferring one thing from another; and in this translated sense, we may be said to discourse, though we sit still. *Euph.* And may we not as well conceive, that the term inspiration might be borrowed from sensible things to denote an action of God, in an extraordinary manner, influencing, exciting, and enlightening, the mind of a prophet or an apostle? who, in this secondary, figurative, and translated sense, may truly be said to be inspired, though there should be nothing in the case of that wind or vapour implied in the original sense of the word? It seems to me, that we may by looking into our own minds plainly perceive certain instincts, impulses, and tendencies, which at proper periods and occasions spring up un-

Digitized by Google

accountably in the soul of man. We observe very visible signs of the same in all other animals. And these things being ordinary and natural, what hinders but we may conceive it possible for the human mind, upon an extraordinary account, to be moved in an extraordinary manner, and its faculties stirred up and actuated by supernatural power? That there are, and have been, and are likely to be, wild visions and hypochondriacal ravings, nobody can deny; but to infer from thence, that there are no true inspirations would be too like concluding, that some men are not in their senses, because other men are fools. And though I am no prophet, and consequently cannot pretend to a clear notion of this matter; yet I shall not therefore take upon me to deny, but a true prophet or inspired person, might have had as certain means, of discerning between Divine inspiration and hypochondriacal fancy, as you can between sleeping and waking, till you have proved the contrary. You may meet in the book of Jeremiah with this passage, "The prophet that hath a dream let him tell a dream: and he that hath my word, let him speak my word faithfully: what is the chaff to the wheat, saith the Lord? Is not my word like as a fire, saith the Lord, and like a hammer that breaketh the rock in pieces?"* You see here a distinction made between wheat and chaff, true and spurious, with the mighty force and power of the former. But I beg pardon for quoting Scripture to you, I make my appeal to the general sense of mankind, and the opinion of the wisest heathens, which seems sufficient to conclude Divine inspiration possible, if not probable, at least till you prove the contrary.

X. *Alc.* The possibility of inspirations and revelations I do not think it necessary to deny. Make the best you can of this concession. *Euph.* Now what is allowed possible we may suppose in fact. *Alc.* We may. *Euph.* Let us then suppose, that God had been pleased

* Jer. xxiii. 28, 29.

Digitized by Google

to make a revelation to men; and that he inspired some as a means to instruct others. Having supposed this, can you deny, that their inspired discourses and revelations might have been committed to writing, or that being written, after a long tract of time they might become in several places obscure; that some of them might even originally have been less clear than others, or that they might suffer some alteration by frequent transcribing, as other writings are known to have done? Is it not even very probable, that all these things would happen? *Alc.* I grant it. *Euph.* And granting this, with what pretence can you reject the Holy Scriptures as not being Divine, upon the account of such signs or marks, as you acknowledge would probably attend a Divine revelation transmitted down to us through so many ages? *Alc.* But allowing all that in reason you can desire, and granting that this may account for some obscurity, may reconcile some small differences, or satisfy us how some difficulties might arise, by inserting, omitting, or changing, here and there a letter, a word, or perhaps a sentence; yet these are but small matters, in respect of the much more considerable and weighty objections I could produce, against the confessed doctrines, or subject matter of those writings. Let us see what is contained in these sacred books, and then judge whether it is probable or possible such revelations should ever have been made by God. Now I defy the wit of man to contrive any thing more extravagant, than the accounts we there find of apparitions, devils, miracles, God manifest in the flesh, regeneration, grace, self-denial, resurrection of the dead, and such-like *ægri somnia*: things so odd, unaccountable, and remote from the apprehension of mankind, you may as soon wash a blackamore white, as clear them of absurdity. No critical skill can justify them, no tradition recommend them, I will not say for Divine revelations, but even for the inventions of men of sense. *Euph.* I had always a great

Digitized by Google

opinion of your sagacity, but now, Alciphron, I consider you as something more than man; else how should it be possible for you to know, what or how far it may be proper for God to reveal? Methinks it may consist with all due deference to the greatest of human understandings, to suppose them ignorant of many things, which are not suited to their faculties, or lie out of their reach. Even the counsels of princes lie often beyond the ken of their subjects, who can only know so much as is revealed by those at the helm; and are often unqualified to judge of the usefulness and tendency even of that, till in due time the scheme unfolds, and is accounted for by succeeding events. That many points contained in Holy Scripture are remote from the common apprehensions of mankind, cannot be denied. But I do not see, that it follows from thence they are not of Divine revelation. On the contrary, should it not seem reasonable to suppose, that a revelation from God should contain something different in kind, or more excellent in degree, than what lay open to the common sense of men, or could even be discovered by the most sagacious philosopher? Accounts of separate spirits, good or bad, prophecies, miracles, and such things, are undoubtedly strange; but I would fain see how you can prove them impossible or absurd. *Alc.* Some things there are so evidently absurd, that it would be almost as silly to disprove them as to believe them: and I take these to be of that class.

XI. *Euph.* But is it not possible, some men may shew as much prejudice and narrowness in rejecting all such accounts, as others might easiness and credulity in admitting them? I never durst make my own observation or experience the rule and measure of things spiritual, supernatural, or relating to another world, because I should think it a very bad one, even for the visible and natural things of this; it would be judging like the Siamese, who was positive it did not freeze in

Digitized by Google

Holland, because he had never known such a thing as hard water or ice in his own country. I cannot comprehend why any one, who admits the union of the soul and body, should pronounce it impossible for the human nature to be united to the Divine, in a manner ineffable and incomprehensible by reason. Neither can I see any absurdity in admitting, that sinful man may become regenerate or a new creature, by the grace of God reclaiming him from a carnal life to a spiritual life of virtue and holiness. And since the being governed by sense and appetite is contrary to the happiness and perfection of a rational creature, I do not at all wonder that we are prescribed self-denial. As for the resurrection of the dead, I do not conceive it so very contrary to the analogy of nature, when I behold vegetables left to rot in the earth rise up again with new life and vigour, or a worm to all appearance dead change its nature, and that, which in its first being crawled on the earth, become a new species, and fly abroad with wings. And indeed when I consider, that the soul and body are things so very different and heterogeneous, I can see no reason to be positive, that the one must necessarily be extinguished upon the dissolution of the other; especially since I find in myself a strong natural desire of immortality, and I have not observed that natural appetites are wont to be given in vain, or merely to be frustrated. Upon the whole those points, which you account extravagant and absurd, I dare not pronounce to be so till I see good reason for it.

XII. *Cri.* No, Alciphron, your positive airs must not pass for proofs; nor will it suffice to say, things are contrary to common sense, to make us think they are so: by common sense, I suppose should be meant, either the general sense of mankind, or the improved reason of thinking men. Now I believe that all those articles, you have with so much capacity and fire at once summed up and exploded, may be shewn to be not dis-

Digitized by Google

agreeable, much less contrary to common sense in one or other of these acceptations. That the gods might appear and converse among men, and that the Divinity might inhabit human nature, were points allowed by the heathens; and for this I appeal to their poets and philosophers, whose testimonies are so numerous and clear, that it would be an affront to repeat them to a man of any education. And though the notion of a devil may not be so obvious, or so fully described, yet there appear plain traces of it, either from reason or tradition. The latter Platonists, as Porphyry and Jamblichus, are very clear in the point, allowing that evil demons delude and tempt, hurt and possess mankind. That the ancient Greeks, Chaldeans, and Egyptians, believed both good and bad angels, may be plainly collected from Plato, Plutarch, and the Chaldean oracles. Origen observes, that almost all the gentiles, who held the being of demons, allowed there were bad ones.* There is even something as early as Homer, that is thought by the learned Cardinal Bessarion† to allude to the fall of Satan, in the account of Ate, whom the poet represents as cast down from heaven by Jove, and then wandering about the earth, doing mischief to mankind. The same Ate is said by Hesiod to be the daughter of Discord: and by Euripides, in his Hippolitus, is mentioned as a tempter to evil. And it is very remarkable, that Plutarch, in his book De Vitando ære Alieno, speaks after Empedocles, of certain demons that fell from heaven, and were banished by God, Δαίμονες θεηλατοι καὶ οὐρανοπτωτεῖς. Nor is that less remarkable which is observed by Ficinus from Pherecydes Syrus, that there had been a downfal of demons who revolted from God; and that Ophioneus (the old serpent) was head of that rebellious crew.‡ Then as to other articles, let any one

* Origen, lib. vii. contra Celsum.

† In Calumniat. Platonis, lib. iii. cap. vii.

‡ Vide Argum. in Phædrum Platonis.

Digitized by Google

consider what the Pythagoreans taught of the purgation and λύσις, or deliverance of the soul: what most philosophers, but especially the Stoics, of subduing our passions: what Plato and Hierocles have said of forgiving injuries: what the acute and sagacious Aristotle writes, in his Ethics to Nichomachus, of the spiritual and Divine life, that life, which, according to him, is too excellent to be thought human; insomuch as man, so far forth as man, cannot attain to it, but only so far forth as he hath something Divine in him: and particularly, let him reflect on what Socrates taught, to wit, that virtue is not to be learned from men, that it is the gift of God, and that good men are not good by virtue of human care or diligence, οὐκ εἶναι ἀνθρωπίνην ἐπιμέλειαν ἢ ἀγαθοὶ ἀγαθοὶ γίγνονται.* Let any man who really thinks, but consider what other thinking men have thought, who cannot be supposed prejudiced in favour of revealed religion; and he will see cause, if not to think with reverence of the Christian doctrines of grace, self-denial, regeneration, sanctification, and the rest, even the most mysterious, at least to judge more modestly and warily, than those who shall, with a confident air, pronounce them absurd, and repugnant to the reason of mankind. And in regard to a future state, the common sense of the gentile world, modern or ancient, and the opinions of the wisest men of antiquity, are things so well known, that I need say nothing about them. To me it seems, the minute philosophers, when they appeal to reason and common sense, mean only the sense of their own party: a coin, how current soever among themselves, that other men will bring to the touchstone, and pass for no more than it is worth. *Lys.* Be those notions agreeable to what or whose sense they may, they are not agreeable to mine. And if I am thought ignorant for this, I pity those who think me so.

XIII. I enjoy myself, and follow my own courses,

* Vide Plat. in Protag. et alibi passim.

Digitized by Google

without remorse or fear; which I should not do, if my head was filled with enthusiasm; whether gentile or Christian, philosophical or revealed, it is all one to me. Let others know or believe what they can, and make the best of it, I, for my part, am happy and safe in my ignorance. *Cri.* Perhaps not so safe neither. *Lys.* Why, surely you will not pretend that ignorance is criminal? *Cri.* Ignorance alone is not a crime. But that wilful ignorance, affected ignorance, ignorance from sloth, or conceited ignorance, is a fault, might easily be proved by the testimony of heathen writers; and it needs no proof to shew, that if ignorance be our fault, we cannot be secure in it as an excuse. *Lys.* Honest Crito seems to hint, that a man should take care to inform himself, while alive, lest his neglect be punished when he is dead. Nothing is so pusillanimous and unbecoming a gentleman as fear: nor could you take a likelier course to fix and rivet a man of honour in guilt, than by attempting to frighten him out of it. This is the stale absurd stratagem of priests, and that which makes them and their religion more odious and contemptible to me than all the other articles put together. *Cri.* I would fain know why it may not be reasonable for a man of honour, or any man who has done amiss, to fear. Guilt is the natural parent of fear; and nature is not used to make men fear where there is no occasion. That impious and profane men should expect Divine punishment, doth not seem so absurd to conceive: and that under this expectation they should be uneasy and even afraid, how consistent soever it may or may not be with honour, I am sure consists with reason. *Lys.* That thing of hell and eternal punishment is the most absurd as well as the most disagreeable thought that ever entered the head of mortal man. *Cri.* But you must own that it is not an absurdity peculiar to Christians, since Socrates, that great free-thinker of Athens, thought it probable there may be such a thing as impious men

Digitized by Google

for ever punished in hell.* It is recorded of this same Socrates, that he has been often known to think for four-and-twenty hours together, fixed in the same posture, and wrapped up in meditation. *Lys.* Our modern free-thinkers are a more lively sort of men. Those old philosophers were most of them whimsical. They had, in my judgment, a dry, narrow, timorous way of thinking, which by no means came up to the frank humour of our times. *Cri.* But I appeal to your own judgment, if a man who knows not the nature of the soul can be assured by the light of reason, whether it is mortal or immortal?

An simul intereat nobiscum morte perempta,
An tenebras orci visat vastasque lacunas?

Lys. But what if I know the nature of the soul? What if I have been taught that whole secret by a modern free-thinker? a man of science who discovered it not by a tiresome introversion of his faculties, not by amusing himself in a labyrinth of notions, or stupidly thinking for whole days and nights together, but by looking into things, and observing the analogy of nature.

XIV. This great man is a philosopher by fire, who has made many processes upon vegetables. It is his opinion, that men and vegetables are really of the same species: that animals are moving vegetables, and vegetables fixed animals; that the mouths of the one and the roots of the other serve to the same use, differing only in position; that blossoms and flowers answer to the most indecent and concealed parts of the human body; that vegetable and animal bodies are both alike organized, and that in both there is life, or a certain motion and circulation of juices through proper tubes or vessels. I shall never forget this able man's unfolding the nature of the soul in the following manner. The soul, said he, is that specific form or principle from whence proceed the distinct qualities or properties of things. Now, as vegetables are a more simple and less

* Vide Platon. in Gorgia.

Digitized by Google

perfect compound, and consequently more easily analised than animals, we will begin with the contemplation of the souls of vegetables. Know then, that the soul of any plant, rosemary for instance, is neither more nor less than its essential oil. Upon this depends its peculiar fragrance, taste, and medicinal virtues, or in other words its life and operations. Separate or extract this essential oil by chemic art, and you get the soul of the plant: what remains being a dead carcass, without any one property or virtue of the plant, which is preserved entire in the oil, a drachm whereof goes further than several pounds of the plant. Now this same essential oil is itself a composition of sulpher and salt, or of a gross unctuous substance, and a fine subtile principle or volatile salt imprisoned therein. This volatile salt is properly the essence of the soul of the plant, containing all its virtue, and the oil is the vehicle of this most subtile part of the soul, or that which fixes and individuates it. And as, upon separation of this oil from the plant, the plant died, so a second death or death of the soul ensues upon the resolution of this essential oil into its principles; as appears by leaving it exposed for some time to the open air, so that the volatile salt or spirit may fly off; after which the oil remains dead and insipid, but without any sensible diminution of its weight, by the loss of that volatile essence of the soul, that ethereal aura, that spark of entity, which returns and mixes with the solar light, the universal soul of the world, and only source of life, whether vegetable, animal, or intellectual; which differ only according to the grossness or fineness of the vehicles, and the different textures of the natural alembics, or, in other words, the organized bodies, where the abovementioned volatile essence inhabits and is elaborated, where it acts and is acted upon. This chemical system lets you at once into the nature of the soul, and accounts for all its phenomena. In that compound which is called man, the soul

Digitized by Google

of essential oil is what commonly goes by the name of animal spirit: for you must know, it is a point agreed by chemists, that spirits are nothing but the more subtile oils. Now in proportion as the essential oil of man is more subtile than that of other creatures, the volatile salt that impregnates it is more at liberty to act, which accounts for those specific properties and actions of human kind, which distinguish them above other creatures. Hence you may learn why among the wise ancients, salt was another name for wit, and in our times a dull man is said to be insipid or insulse. Aromatic oils maturated by great length of time turn to salts: this shews why human kind grow wiser by age. And what I have said of the twofold death or dissolution; first of the compound, by separating the soul from the organical body, and secondly of the soul itself, by dividing the volatile salt from the oil, illustrates and explains that notion of certain ancient philosophers: that as the man was a compound of soul and body, so the soul was compounded of the mind or intellect, and its ethereal vehicle; and that the separation of soul and body, or death of the man, is, after a long tract of time, succeeded by a second death of the soul itself, to wit, the separation or deliverance of the intellect from its vehicle, and reunion with the sun. *Euph.* O Lysicles! your ingenious friend has opened a new scene, and explained the most obscure and difficult points in the clearest and easiest manner. *Lys.* I must own this account of things struck my fancy. I am no great lover of creeds or systems; but when a notion is reasonable and grounded on experience I know how to value it. *Cri.* In good earnest, Lysicles, do you believe this account to be true? *Lys.* Why then in good earnest I do not know whether I do or no. But I can assure you the ingenious artist himself has not the least doubt about it. And to believe an artist in his art is a just maxim and short way to science. *Cri.* But what relation hath the

Digitized by Google

soul of man to chemic art? The same reason, that bids me trust a skilful artist in his art, inclines me to suspect him out of his art. Men are too apt to reduce unknown things to the standard of what they know, and bring a prejudice or tincture from things they have been conversant in, to judge thereby of things in which they have not been conversant: I have known a fiddler gravely teach that the soul was harmony; a geometrician very positive that the soul must be extended; and a physician, who having pickled half-a-dozen embryos and dissected as many rats and frogs, grew conceited, and affirmed there was no soul at all, and that it was a vulgar error. *Lys.* My notions sit easy. I shall not engage in pedantic disputes about them. They who do not like them may leave them. *Euph.* This, I suppose, is said much like a gentleman.

XV. But pray, Lysicles, tell me whether the clergy come within that general rule of yours, that an artist may be trusted in his art? *Lys.* By no means. *Euph.* Why so? *Lys.* Because I take myself to know as much of those matters as they do. *Euph.* But you allow, that in any other profession, one who hath spent much time and pains may attain more knowledge, than a man of equal or better parts, who never made it his particular business. *Lys.* I do. *Euph.* And nevertheless in things religious and Divine you think all men equally knowing. *Lys.* I do not say all men. But I think all men of sense competent judges. *Euph.* What! are the Divine attributes and dispensations to mankind, the true end and happiness of rational creatures, with the means of improving and perfecting their beings, more easy and obvious points than those which make the subject of every common profession? *Lys.* Perhaps not: but one thing I know, some things are so manifestly absurd, that no authority shall make me give into them. For instance, if all mankind should pretend to persuade me that the Son of God was born upon earth

Digitized by Google

in a poor family, was spit upon, buffeted, and crucified, lived like a beggar and died like a thief, I should never believe one syllable of it. Common sense shews every one, what figure it would be decent for an earthly prince or ambassador to make; and the Son of God, upon an embassy from heaven, must needs have made an appearance beyond all others of great eclat, and in all respects the very reverse of that which Jesus Christ is reported to have made, even by his own historians. *Euph.* O Lysicles! though I had ever so much mind to approve and applaud your ingenious reasoning, yet I dare not assent to this for fear of Crito. *Lys.* Why so? *Euph.* Because he observed just now, that men judge of things they do not know, by prejudices from things they do know. And I fear he would object that you, who have been conversant in the grand *monde*, having your head filled with a notion of attendants and equipage and liveries, the familiar badges of human grandeur, are less able to judge of that which is truly Divine; and that one who had seen less, and thought more, would be apt to imagine a pompous parade of worldly greatness, not the most becoming the author of a spiritual religion, that was designed to wean men from the world, and raise them above it. *Cri.* Do you think, Lysicles, if a man should make his entrance into London in a rich suit of clothes, with a hundred gilt coaches, and a thousand laced footmen; that this would be a more Divine appearance, and have more of true grandeur in it, than if he had power with a word to heal all manner of diseases, to raise the dead to life, and still the raging of the winds and the sea? *Lys.* Without all doubt it must be very agreeable to common sense to suppose, that he could restore others to life who could not save his own! You tell us, indeed, that he rose again from the dead: but what occasion was there for him to die, the just for the unjust, the Son of God for wicked men? and why in that individual place? Why at that very time above

Digitized by Google

all others? Why did he not make his appearance earlier, and preach in all parts of the world, that the benefit might have been more extensive? Account for all these points, and reconcile them, if you can, to the common notions and plain sense of mankind. *Cri.* And what if those, as well as many other points, should lie out of the road that we are acquainted with; must we therefore explode them, and make it a rule to condemn every proceeding as senseless, that doth not square with the vulgar sense of man; if the precepts and certain primary tenets of religion appear in the eye of reason good and useful; and if they are also found to be so by their effects; we may, for the sake of them, admit certain other points or doctrines recommended with them, to have a good tendency, to be right and true; although we cannot discern their goodness or truth by the mere light of human reason, which may well be supposed an insufficient judge of the proceedings, counsels, and designs, of Providence, and this sufficeth to make our conviction reasonable.

XVI. It is an allowed point that no man can judge of this or that part of a machine taken by itself, without knowing the whole, the mutual relation or dependence of its parts, and the end for which it was made. And, as this is a point acknowledged in corporeal and natural things, ought we not by a parity of reason to suspend our judgment of a single unaccountable part of the Divine economy, till we are more fully acquainted with the moral system, or world of spirits, and are let into the designs of God's providence, and have an extensive view of his dispensations past, present, and future? Alas! Lysicles, what do you know even of yourself, whence you come, what you are, or whither you are going? To me it seems, that a minute philosopher is like a conceited spectator, who never looked behind the scenes, and yet would judge of the machinery; who from a transient glimpse of a part only of some one

Digitized by Google

scene, would take upon him to censure the plot of a play. *Lys.* As to the plot I will not say; but in half a scene a man may judge of an absurd actor. With what colour or pretext can you justify the vindictive, froward, whimsical behaviour of some inspired teachers or prophets? Particulars that serve neither for profit nor pleasure I make a shift to forget; but in general the truth of this charge I do very well remember. *Cri.* You need be at no pains to prove a point I shall neither justify nor deny. That there have been human passions, infirmities, and defects, in persons inspired by God, I freely own; nay, that very wicked men have been inspired, as Balaam for instance and Caiaphas, cannot be denied. But what will you infer from thence? Can you prove it impossible, that a weak or sinful man should become an instrument to the Spirit of God, for conveying his purpose to other sinners? Or that Divine light may not, as well as the light of the sun, shine on a foul vessel without polluting its rays? *Lys.* To make short work, the right way would be to put out our eyes, and not judge at all. *Cri.* I do not say so, but I think it would be right, if some sanguine persons upon certain points suspected their own judgment. *Alc.* But the very things said to be inspired, taken by themselves and in their own nature, are sometimes so wrong, to say no worse, that a man may pronounce them not to be Divine at first sight; without troubling his head about the system of Providence or connexion of events: as one may say that grass is green, without knowing or considering how it grows, what uses it is subservient to, or how it is connected with the mundane system. Thus for instance, the spoiling of the Egyptians, and the extirpation of the Canaanites, every one at first glance sees to be cruel and unjust, and may therefore without deliberating pronounce them unworthy of God. *Cri.* But, Alciphron, to judge rightly of these things, may it not be proper to consider how long the Israelites had wrought

Digitized by Google

under those severe task-masters of Egypt, what injuries and hardships they had sustained from them; what crimes and abominations the Canaanites had been guilty of; what right God hath to dispose of the things of this world, to punish delinquents, and to appoint both the manner and the instruments of his justice? Man who has not such right over his fellow-creatures, who is himself a fellow-sinner with them, who is liable to error as well as passion, whose views are imperfect, who is governed more by prejudice than the truth of things, may not improbably deceive himself, when he sets up for a judge of the proceedings of the holy, omniscient, impassive Creator and Governor of all things.

XVII. *Alc.* Believe me, Crito, men are never so industrious to deceive themselves, as when they engage to defend their prejudices. You would fain reason us out of all use of our reason: can any thing be more irrational? To forbid us to reason on the Divine dispensations, is to suppose they will not bear the test of reason: or, in other words, that God acts without reason, which ought not to be admitted, no, not in any single instance: for if in one, why not in another? Whoever therefore allows a God, must allow that he always acts reasonably. I will not therefore attribute to him actions and proceedings that are unreasonable. He hath given me reason to judge withal; and I will judge by that unerring light, lighted from the universal lamp of nature. *Cri.* O Alciphron! as I frankly own the common remark to be true, that when a man is against reason, it is a shrewd sign reason is against him; so I should never go about to dissuade any one, much less one who so well knew the value of it, from using that noble talent. On the contrary, upon all subjects of moment, in my opinion, a man ought to use his reason; but then, whether it may not be reasonable to use it with some deference to superior reason, it will not perhaps be amiss to consider. *Alc.* It must surely derogate from the wisdom of God,

Digitized by Google

to suppose his conduct cannot bear being inspected, not even by the twilight of human reason. *Euph.* You allow, then, God to be wise? *Alc.* I do. *Euph.* What! infinitely wise? *Alc.* Even infinitely. *Euph.* His wisdom, then, far exceeds that of man? *Alc.* Vastly. *Euph.* Probably more than the wisdom of man that of a child? *Alc.* Without all question. *Euph.* What think you, Alciphron, must not the conduct of a parent seem very unaccountable to a child, when its inclinations are thwarted, when it is put to learn the letters, when it is obliged to swallow bitter physic, to part with what it likes, and to suffer, and do, and see, many things done contrary to its own judgment, however reasonable or agreeable to that of others? *Alc.* This I grant. *Euph.* Will it not therefore follow from hence, by a parity of reason, that the little child, man, when it takes upon it to judge of the schemes of parental providence, and a thing of yesterday, to criticise the economy of the Ancient of Days? will it not follow, I say, that such a judge, of such matters, must be apt to make very erroneous judgments? esteeming those things in themselves unaccountable, which he cannot account for; and concluding of some certain points, from an appearance of arbitrary carriage towards him, which is suited to his infancy and ignorance, that they are in themselves capricious or absurd, and cannot proceed from a wise, just, and benevolent God. This single consideration, if duly attended to, would, I verily think, put an end to many conceited reasonings against revealed religion. *Alc.* You would have us then conclude, that things, to our wisdom unaccountable, may nevertheless proceed from any abyss of wisdom which our line cannot fathom; and that prospects viewed but in part, and by the broken tinged light of our intellects, though to us they may seem disproportionate and monstrous, may nevertheless appear quite otherwise to another eye, and in a different situation: in a word, that as human wisdom is but childish folly, in respect of the

Digitized by Google

Divine, so the wisdom of God may sometimes seem foolishness to men.

XVIII. *Euph.* I would not have you make these conclusions, unless in reason you ought to make them: but if they are reasonable, why should you not make them? *Alc.* Some things may seem reasonable at one time, and not at another: and I take this very apology you make, for credulity and superstition, to be one of those things. When I view it in its principles, it seems naturally to follow from just concessions; but when I consider its consequences, I cannot agree to it. A man had as good abdicate his nature, as disclaim the use of reason. A doctrine is unaccountable, therefore it must be Divine? *Euph.* Credulity and superstition are qualities so disagreeable and degrading to human nature, so surely an effect of weakness, and so frequently a cause of wickedness, that I should be very much surprised to find a just course of reasoning lead to them. I can never think that reason is a blind guide to folly, or that there is any connexion between truth and falsehood, no more than I think a thing's being unaccountable a proof that it is Divine: though at the same time I cannot help acknowledging, it follows from your own avowed principles, that a thing's being unaccountable, or incomprehensible to our reason, is no sure argument to conclude it is not Divine; especially when there are collateral proofs of its being so. A child is influenced by the many sensible effects it hath felt, of paternal love and care and superior wisdom, to believe and do several things with an implicit faith and obedience: and if we in the same manner, from the truth and reasonableness which we plainly see in so many points within our cognizance, and the advantages which we experience from the seed of the gospel sown in good ground, were disposed to an implicit belief of certain other points, relating to schemes we do not know, or subjects to which our talents are perhaps disproportionate, I am tempted to think it might be-

Digitized by Google

come our duty without dishonouring our reason; which is never so much dishonoured as when it is foiled, and never in more danger of being foiled, than by judging where it hath neither means nor right to judge. *Lys.* I would give a good deal, to see that ingenious gamester Glaucus have the handling of Euphranor one night at our club. I own he is a peg too high for me in some of his notions: but then he is admirable at vindicating human reason against the impositions of priestcraft.

XIX. *Alc.* He would undertake to make it as clear as daylight, that there was nothing worth a straw in Christianity, but what every one knew, or might know, as well without as with it, before as since Jesus Christ. *Cri.* That great men, it seems, teacheth, that common sense alone is the pole-star, by which mankind ought to steer; and that what is called revelation must be ridiculous, because it is unnecessary and useless, the natural talents of every man being sufficient to make him happy, good, and wise, without any further correspondence with Heaven either for light or aid. *Euph.* I have already acknowledged how sensible I am, that my situation in this obscure corner of the country deprives me of many advantages, to be had from the conversation of ingenious men in town. To make myself some amends, I am obliged to converse with the dead and my own thoughts, which last I know are of little weight against the authority of Glaucus, or such-like great men in the minute philosophy. But what shall we say to Socrates, for he too was of an opinion very different from that ascribed to Glaucus? *Alc.* For the present we need not insist on authorities, ancient or modern, or inquire which was the greater man, Socrates or Glaucus. Though, methinks, for so much as authority can signify, the present times, gray and hoary with age and experience, have a manifest advantage over those that are falsely called *ancient*. But not to dwell on authorities, I tell you in plain English, Euphranor, we do not want your revelations;

Digitized by Google

and that for this plain reason, those that are clear every body knew before, and those that are obscure nobody is the better for. *Euph.* Whether it was possible for mankind to have known all parts of the Christian religion, besides mysteries and positive institutions, is not the question between us; and that they actually did not know them is too plain to be denied. This, perhaps, was for want of making a due use of reason. But, as to the usefulness of revelation, it seems much the same thing whether they could not know, or would not be at the pains to know, the doctrines revealed. And as for those doctrines which were too obscure to penetrate, or too sublime to reach, by natural reason; how far mankind may be the better for them, is more, I had almost said, than even you or Glaucus can tell.

XX. *Alc.* But whatever may be pretended as to obscure doctrines and dispensations, all this hath nothing to do with prophecies, which being altogether relative to mankind, and the events of this world, to which our faculties are surely well enough proportioned, one might expect should be very clear, and such as might inform instead of puzzling us. *Euph.* And yet it must be allowed that as some prophecies are clear, there are others very obscure: but left to myself, I doubt I should never have inferred from thence that they were not Divine. In my own way of thinking I should have been apt to conclude, that the prophecies we understand are a proof for inspiration; but that those we do not understand are no proof against it. Inasmuch as for the latter our ignorance or the reserve of the Holy Spirit may account, but for the other nothing, for aught that I see, can account but inspiration. *Alc.* Now I know several sagacious men, who conclude this very differently from you, to wit, that the one sort of prophecies is nonsense, and the other contrived after the events. Behold the difference between a man of free thought and one of narrow principles! *Euph.* It seems then they reject the revelations

Digitized by Google

because they are obscure, and Daniel's prophecies because they are clear? *Alc.* Either way a man of sense sees cause to suspect there has been foul play. *Euph.* Your men of sense are, it seems, hard to please. *Alc.* Our philosophers are men of piercing eyes. *Euph.* I suppose such men never make transient judgments from transient views; but always established fixed conclusions upon a thorough inspection of things. For my own part, I dare not engage with a man, who has examined those points so nicely, as it may be presumed you have done: but I could name some eminent writers of our own, now living, whose books on the subject of prophecy have given great satisfaction to gentlemen, who pass for men of sense and learning here in the country. *Alc.* You must know, Euphranor, I am not at leisure to peruse the learned writings of divines, on a subject which a man may see through with half an eye. To me it is sufficient, that the point itself is odd and out of the road of nature. For the rest, I leave them to dispute and settle among themselves, where to fix the precise time when the sceptre departed from Judah; or whether in Daniel's prophecy of the Messiah we should compute by the Chaldean or the Julian year. My only conclusion concerning all such matters is, that I will never trouble myself about them. *Euph.* To an extraordinary genius, who sees things with half an eye, I know not what to say: but for the rest of mankind, one would think it should be very rash in them to conclude, without much and axact inquiry, on the unsafe side of a question which concerns their chief interest. *Alc.* Mark it well: a true genius in pursuit of truth makes swift advances on the wings of general maxims, while little minds creep and grovel amidst mean particularities. I lay it down for a certain truth; that by the fallacious arts of logic and criticism, straining and forcing, palliating, patching, and distinguishing, a man may justify or make out any thing; and this remark, with one or two about prejudice, saves

Digitized by Google

me a world of trouble. *Euph.* You, Alciphron, who soar sublime on strong and free opinions, vouchsafe to lend a helping hand to those whom you behold entangled in the birdlime of prejudice. For my part, I find it very possible to suppose prophecy may be Divine, although there should be some obscurity at this distance, with respect to dates of time or kinds of years. You yourself own revelation possible: and allowing this I can very easily conceive it may be odd, and out of the road of nature. I can without amazement meet in Holy Scripture divers prophecies, whereof I do not see the completion, divers texts I do not understand, divers mysteries above my comprehension, and ways of God to me unaccountable. Why may not some prophecies relate to parts of history I am not well enough acquainted with, or to events not yet come to pass? It seems to me that prophecies unfathomed by the hearer, or even the speaker himself, have been afterward verified and understood in the event; and it is one of my maxims, that, *what hath been may be.* Though I rub my eyes, and do my utmost to extricate myself from prejudice, yet it still seems very possible to me, that, what I do not, a more acute, more attentive, or more learned man, may understand: at least thus much is plain; the difficulty of some points or passages doth not hinder the clearness of others, and those parts of Scripture, which we cannot interpret, we are not bound to know the sense of. What evil or what inconvenience, if we cannot comprehend what we are not obliged to comprehend, or if we cannot account for those things which it doth not belong to us to account for? Scriptures not understood, at one time, or by one person, may be understood at another time, or by other persons. May we not perceive, by retrospect on what is past, a certain progress from darker to lighter, in the series of the Divine economy towards man? And may not future events clear up such points as at present exercise the faith of believers? Now I

Digitized by Google

cannot help thinking (such is the force either of truth or prejudice) that in all this, there is nothing strained or forced, or which is not reasonable or natural to suppose.

XXI. *Alc.* Well, Euphranor, I will lend you a helping hand, since you desire it, but think fit to alter my method: for you must know, the main points of Christian belief have been infused so early, and inculcated so often by nurses, pedagogues, and priests, that, be the proofs ever so plain, it is a hard matter to convince a mind, thus tinctured and stained, by arguing against revealed religion from its internal characters. I shall therefore set myself to consider things in another light, and examine your religion by certain external characters or circumstantials, comparing the system of revelation with collateral accounts of ancient heathen writers, and shewing how ill it consists with them. Know then, that the Christian revelation, supposing the Jewish, it follows, that if the Jewish be destroyed the Christian must of course fall to the ground. Now, to make short work, I shall attack this Jewish revelation in its head. Tell me, are we not obliged, if we believe the Mosaic account of things, to hold the world was created not quite six thousand years ago? *Euph.* I grant we are. *Alc.* What will you say now, if other ancient records carry up the history of the world many thousand years beyond this period? What if the Egyptians and Chinese have accounts extending to thirty or forty thousand years? What if the former of these nations have observed twelve hundred eclipses, during the space of forty-eight thousand years, before the time of Alexander the Great? What if the Chinese have also many observations antecedent to the Jewish account of the creation? What if the Chaldeans had been observing the stars for above four hundred thousand years? And what shall we say if we have successions of kings and their reigns, marked for several thousand years before

Digitized by Google

the beginning of the world, assigned by Moses? Shall we reject the accounts and records of all other nations, the most famous, ancient, and learned in the world, and preserve a blind reverence for the legislator of the Jews? *Euph.* And pray, if they deserve to be rejected, why should we not reject them? What if those monstrous chronologies contain nothing but names without actions and manifest fables? What if those pretended observations of Egyptians and Chaldeans were unknown or unregarded by ancient astronomers? What if the Jesuits have shewn the inconsistency of the like Chinese pretensions with the truth of the Ephemerides? What if the most ancient Chinese observations allowed to be authentic, are those of two fixed stars, one in the winter solstice, the other in the vernal equinox, in the reign of their king Yao, which was since the flood?* *Alc.* You must give me leave to observe, the Romish missionaries are of small credit in this point. *Euph.* But what knowledge have we, or can we have, of those Chinese affairs, but by their means? The same persons that tell us of these accounts refute them; if we reject their authority in one case, what right have we to build upon it in another? *Alc.* When I consider that the Chinese have annals of more than forty thousand years, and that they are a learned, ingenious, and acute people, very curious, and addicted to arts and sciences, I profess I cannot help paying some regard to their accounts of time. *Euph.* Whatever advantage their situation and political maxims may have given them, it doth not appear they are so learned or so acute in point of science as the Europeans. The general character of the Chinese, if we may believe Trigaltius and other writers, is, that they are men of a trifling and credulous curiosity, addicted to search after the philosopher's stone, and a medicine to make men immortal, to astrology, fortune-telling, and presages of all kinds. Their ignorance in

* Bianchini Histor. Univers. cap. xvii.

Digitized by Google

nature and mathematics is evident, from the great hand the Jesuits make of that kind of knowledge among them. But what shall we think of those extraordinary annals, if the very Chinese themselves give no credit to them for more than three thousand years before Jesus Christ? If they do not pretend to have begun to write history above four thousand years ago? And if the oldest books they have now extant in an intelligible character, are not above two thousand years old? One would think a man of your sagacity, so apt to suspect every thing out of the common road of nature, should not without the clearest proof admit those annals for authentic, which record such strange things as the sun's not setting for ten days, and gold raining three days together. Tell me, Alciphron, can you really believe these things without inquiring by what means the tradition was preserved, through what hands it passed, or what reception it met with, or who first committed it to writing? *Alc.* To omit the Chinese and their story, it will serve my purpose as well to build on the authority of Manetho, that learned Egyptian priest, who had such opportunities of searching into the most ancient accounts of time, and copying into his dynasties the most venerable and authentic records inscribed on the pillars of Hermes. *Euph.* Pray, Alciphron, where were those chronological pillars to be seen? *Alc.* In the Seriadical land. *Euph.* And where is that country? *Alc.* I don't know. *Euph.* How were those records preserved for so many ages down to the time of this Hermes, who is said to have been the first inventor of letters? *Alc.* I do not know. *Euph.* Did any other writers, before or since Manetho, pretend to have seen, or transcribed, or known, any thing about these pillars? *Alc.* Not that I know. *Euph.* Or about the place where they are said to have been? *Alc.* If they did, it is more than I know. *Euph.* Do the Greek authors that went into Egypt, and consulted the Egyptian priests, agree with

Digitized by Google

these accounts of Manetho? *Alc.* Suppose they do not. *Euph.* Doth Diodorus, who lived since Manetho, follow, cite, or so much as mention, this same Manetho? *Alc.* What will you infer from all this? *Euph.* If I did not know you and your principles, and how vigilantly you guard against imposture, I should infer that you were a very credulous man. For what can we call it but credulity to believe most incredible things on most slender authority, such as fragments of an obscure writer, disagreeing with all other historians, supported by an obscure authority of Hermes's pillars, for which you must take his word, and which contain things so improbable as successions of gods and demi-gods, for many thousand years, Vulcan alone having reigned nine thousand? There is little in these venerable dynasties of Manetho besides names and numbers; and yet in that little we meet with very strange things, that would be thought romantic in another writer: for instance, the Nile overflowing with honey, the moon grown bigger, a speaking lamb, seventy kings who reigned as many days one after another, a king a day.* If you are known, Alciphron, to give credit to these things, I fear you will lose the honour of being thought incredulous. *Alc.* And yet these ridiculous fragments, as you would represent them, have been thought worth the pains and lucubrations of very learned men. How can you account for the work that the great Joseph Scaliger and Sir John Marsham make about them? *Euph.* I do not pretend to account for it. To see Scaliger add another Julian period to make room for such things as Manetho's dynasties, and Sir John Marsham take so much learned pains to piece, patch, and mend those obscure fragments, to range them in synchronisms, and try to adjust them with sacred chronology, or make them consistent with themselves and other accounts, is to me very strange and unaccountable. Why they, or Eusebius, or

* Scal. Can. Isag. lib. ii.

Digitized by Google

yourself, or any other learned man, should imagine those things deserve any regard I leave you to explain.

XXII. *Alc.* After all it is not easy to conceive what should move, not only Manetho, but also other Egyptian priests, long before his time, to set up such great pretences to antiquity, all which, however differing from one another, agree in this, that they overthrow the Mosaic history? How can this be accounted for without some real foundation? What point of pleasure, or profit, or power, could set men on forging successions of ancient names, and periods of time for ages before the world began? *Euph.* Pray, Alciphron, is there any thing so strange or singular in this vain humour of extending the antiquity of nations beyond the truth? Hath it not been observed in most parts of the world? Doth it not even in our own times shew itself, especially among those dependent and subdued people, who have little else to boast of. To pass over others of our fellow-subjects, who, in proportion as they are below their neighbours in wealth and power, lay claim to a more remote antiquity; are not the pretensions of Irishmen in this way known to be very great? If I may trust my memory, O'Flaherty, in his Ogygia, mentions some transactions in Ireland before the flood. The same humour, and from the same cause, appears to have prevailed in Sicily, a country for some centuries past subject to the dominion of foreigners: during which time the Sicilians have published divers fabulous accounts, concerning the original and antiquity of their cities, wherein they vie with each other. It is pretended to be proved by ancient inscriptions, whose existence or authority seems on a level with that of Hermes's pillars, that Palermo was founded in the days of the patriarch Isaac by a colony of Hebrews, Phœnicians, and Syrians; and that a grandson of Esau had been governor of a tower subsisting within these two hundred years in

Digitized by Google

that city.* The antiquity of Messina hath been carried still higher, by some who would have us think it was enlarged by Nimrod.† The like pretensions are made by Catania, and other towns of that island, who have found authors of as good credit as Manetho to support them. Now I should be glad to know why the Egyptians, a subdued people, may not probably be supposed to have invented fabulous accounts from the same motive, and like others valued themselves on extravagant pretensions to antiquity, when in all other respects they were so much inferior to their masters? That people had been successively conquered by Ethiopians, Assyrians, Babylonians, Persians, and Grecians, before it appears that those wonderful dynasties of Manetho and the pillars of Hermes were ever heard of; as they had been by the two first of those nations before the time of Solon himself, the earliest Greek that is known to have consulted the priests of Egypt: whose accounts were so extravagant that even the Greek historians, though unacquainted with Holy Scripture, were far from giving an entire credit to them. Herodotus making a report upon their authority, saith, those to whom such things seem credible may make the best of them, for himself declaring that it was his purpose to write what he heard.‡ And both he and Diodorus do, on divers occasions, shew the same diffidence in the narratives of those Egyptian priests. And as we observed of the Egyptians, it is no less certain that the Phœnicians, Assyrians, and Chaldeans, were each a conquered and reduced people, before the rest of the world appeared to have heard any thing of their pretensions to so remote antiquity. *Cri.* But what occasion is there to be at any pains to account for the humour of fabulous writers? Is it not sufficient to see that they relate absurdities; that they are unsupported

* Fazelli Hist. Sicul. decad. i. lib. viii.
† Reina Notizie Istoriche di Messina.
‡ Herodotus in Euterpe.

Digitized by Google

by any foreign evidence; that they do not appear to have been in credit, even among their own countrymen; and that they are inconsistent one with another? That men should have the vanity to impose on the world by false accounts, is nothing strange; it is much more so, that after what hath been done towards undeceiving the world by so many learned critics, there should be men found capable of being abused by those paltry scraps of Manetho, Berosus, Ctesias, or the like fabulous or counterfeit writers. *Alc.* Give me leave to observe, those learned critics may prove to be ecclesiastics, perhaps some of them papists. *Cri.* What do you think of Sir Isaac Newton, was he either a papist or ecclesiastic? Perhaps you may not allow him to have been, in sagacity, or force of mind, equal to the great men of the minute philosophy: but it cannot be denied that he had read and thought much upon the subject, and that the result of his inquiry was a perfect contempt of all those celebrated rivals to Moses. *Alc.* It hath been observed by ingenious men, that Sir Isaac Newton, though a layman, was deeply prejudiced, witness his great regard to the Bible. *Cri.* And the same may be said of Mr. Locke, Mr. Boyle, Lord Bacon, and other famous laymen, who, however knowing in some points, must nevertheless be allowed not to have attained that keen discernment, which is the peculiar distinction of your sect!

XXIII. But perhaps there may be other reasons beside prejudice, to incline a man to give Moses the preference, on the truth of whose history the government, manners, and religion, of his country were founded and framed; of whose history there are manifest traces in the most ancient books and traditions of the gentiles, particularly of the Brachmans and Persees; whose history is confirmed by the late invention of arts and sciences, the gradual peopling of the world, the very names of ancient nations, and even by the authority and arguments of that renowned philosopher Lucretius, who,

Digitized by Google

on other points, is so much admired and followed by those of your sect. Not to mention, that the continual decrease of fluids, the sinking of hills, and the diminution of planetary motions, afford so many natural proofs, which shew this world had a beginning; as the civil or historical proofs abovementioned do plainly point out, this beginning to have been about the time assigned in Holy Scripture. After all which I beg leave to add one observation more. To any one who considers that, on digging into the earth, such quantities of shells, and, in some places, bones and horns of animals, are found sound and entire after having lain there in all probability some thousands of years; it should seem probable, that gems, medals, and implements in metal or stone, might have lasted entire, buried under ground forty or fifty thousand years, if the world had been so old. How comes it then to pass that no remains are found, no antiquities of those numerous ages preceding the Scripture accounts of time; no fragments of buildings, no public monuments, no intaglias, cammeos, statues, basso-relievos, medals, inscriptions, utensils, or artificial works of any kind, are ever discovered, which may bear testimony to the existence of those mighty empires, those successions of monarchs, heroes, and demi-gods, for so many thousand years? Let us look forward and suppose ten or twenty thousand years to come, during which time we will suppose, that plagues, famines, wars, and earthquakes, shall have made great havoc in the world; is it not highly probable, that at the end of such a period, pillars, vases, and statues now in being of granite, porphyry, or jasper (stones of such hardness, as we know them to have lasted two thousand years above ground, without any considerable alteration), would bear record of these and past ages? or that some of our current coins might then be dug up, or old walls, and the foundations of buildings, shew themselves, as well as the hells and stones of the primeval world are preserved

Digitized by Google

down to our times. To me it seems to follow, from these considerations, which common sense and experience make all men judges of, that we may see good reason to conclude, the world was created about the time recorded in Holy Scripture. And if we admit a thing so extraordinary as the creation of this world, it should seem that we admit something strange, and odd, and new to human apprehension, beyond any other miracle whatsoever.

XXIV. Alciphron sat musing and made no answer; whereupon Lysicles expressed himself in the following manner. I must own I should rather suppose with Lucretius, that the world was made by chance, and that men grew out of the earth, like pompions, than pin my faith on those wretched fabulous fragments of oriental history. And as for the learned men, who have taken pains to illustrate and piece them together, they appear to me no better than so many musty pedants. An ingenious free-thinker may perhaps now and then make some use of their lucubrations, and play one absurdity against another. But you are not therefore to think, he pays any real regard to the authority of such apocryphal writers, or believes one syllable of the Chinese, Babylonian, or Egyptian traditions. If we seem to give them a preference before the Bible, it is only because they are not established by law. This is my plain sense of the matter, and I dare say it is the general sense of our sect; who are too rational to be in earnest on such trifles, though they sometime give hints of deep erudition, and put on a grave face to divert themselves with bigots. *Alc.* Since Lysicles will have it so, I am content not to build on accounts of time preceding the Mosaic. I must nevertheless beg leave to observe, there is another point of a different nature, against which there do not lie the same exceptions, that deserves to be considered, and may serve our purpose as well. I presume it will be allowed that historians, treating of

Digitized by Google

times within the Mosaic account, ought by impartial men to be placed on the same foot with Moses. It may therefore be expected, that those, who pretend to vindicate his writings, should reconcile them with parallel accounts of other authors, treating of the same times, things, and persons. And, if we are not attached singly to Moses, but take our notions from other writers, and the probability of things, we shall see good cause to believe, the Jews were only a crew of leprous Egyptians, driven from their country on account of that loathsome distemper; and that their religion, pretended to have been delivered from heaven at Mount Sinai, was in truth learned in Egypt, and brought from thence. *Cri.* Not to insist, on what cannot be denied, that an historian writing of his own times is to be believed, before others who treat of the same subject several ages after, it seems to me that it is absurd to expect we should reconcile Moses with profane historians, till you have first reconciled them one with one other. In answer therefore to what you observe, I desire you would consider in the first place, that Manetho, Chæremon, and Lysimachus, had published inconsistent accounts of the Jews, and their going forth from Egypt:* in the second place, that their language is a plain proof they were not of Egyptian, but either of Phœnician, of Syrian, or of Chaldean original: and in the third place, that it doth not seem very probable to suppose, their religion, the basis or fundamental principle of which was the worship of one supreme God, and the principal design of which was to abolish idolatry, could be derived from Egypt, the most idolatrous of all nations. It must be owned, the separate situation and institutions of the Jews, occasioned their being treated by some foreigners, with great ignorance and contempt of them and their original. But Strabo, who is allowed to have been a judicious and inquisitive writer, though he was not acquainted with

* Joseph. contra Apion. lib. i.

Digitized by Google

their true history, makes more honourable mention of them. He relates that Moses, with many other worshippers of one infinite God, not approving the image-worship of the Egyptians and other nations, went out from Egypt and settled in Jerusalem, where they built a temple to one only God without images.*

XXV. *Alc.* We who assert the cause of liberty against religion, in these later ages of the world, lie under great disadvantages, from the loss of ancient books, which cleared up many points to the eyes of those great men, Celsus, Porphyry, and Julian, which at a greater distance and with less help cannot so easily be made out by us: but had we those records, I doubt not we might demolish the whole system at once. *Cri.* And yet I make some doubt of this; because those great men, as you call them, with all those advantages, could not do it. *Alc.* That must needs have been owing to the dulness and stupidity of the world in those days, when the art of reasoning was not so much known and cultivated as of late: but those men of true genius saw through the deceit themselves, and were very clear in their opinion, which convinces me they had good reason on their side. *Cri.* And yet that great man Celsus seems to have had very slight and inconstant notions: one while, he talks like a thorough Epicurean; another, he admits miracles, prophecies, and a future state of rewards and punishments. What think you, Alciphron, is it not something capricious in so great a man, among other advantages which he ascribes to brutes above human kind, to suppose they are magicians and prophets; that they have a nearer commerce and union with the Divinity; that they know more than men; and that elephants, in particular, are of all others most religious animals and strict observers of an oath.† *Alc.* A great genius will be sometimes whimsical. But what do you say to the Emperor Julian, was he not an extraordinary

* Strab. lib. xvi. † Origen contra Celsum, lib. iv.

Digitized by Google

man? *Cri.* He seems by his writings to have been lively and satirical. Further, I make no difficulty of owning that he was a generous, temperate, gallant, and facetious emperor: but at the same time it must be allowed, because his own heathen panegyrist Ammianus Marcellinus* allows it, that he was a prating, light, vain, superstitious sort of man. And therefore his judgment or authority can be but of small weight with those who are not prejudiced in his favour. *Alc.* But of all the great men who wrote against revealed religion, the greatest without question was that truly great man Porphyry, the loss of whose invaluable work can never be sufficiently lamented. This profound philosopher went to the bottom and original of things. He most learnedly confuted the Scriptures, shewed the absurdity of the Mosaic accounts, undermined and exposed the prophecies, and ridiculed allegorical interpretations.† The moderns, it must be owned, have done great things and shewn themselves able men; yet I cannot but regret the loss of what was done by a person of such vast abilities, and who lived so much nearer the fountain-head; though his authority survives his writings, and must still have its weight with impartial men, in spite of the enemies of truth. *Cri.* Porphyry, I grant, was a thorough infidel, though he appears by no means to have been incredulous. It seems he had a great opinion of wizards and necromancers, and believed the mysteries, miracles, and prophecies, of Theurgists and Egyptian priests. He was far from being an enemy to obscure jargon; and pretended to extraordinary ecstasies. In a word, this great man appears to have been as unintelligible as a schoolman, as superstitious as a monk, and as fanatical as any quietist or quaker; and, to complete his character as a minute philosopher, he was under strong temptations to lay violent hands on himself. We

* Am. Marcellin. lib. xxv.

† Luc. Holstenius de Vita et Scriptis Porphyrii.

Digitized by Google

may frame a notion of this patriarch of infidelity, by his judicious way of thinking upon other points, as well as the Christian religion. So sagacious was he as to find out, that the souls of insects, when separated from their bodies, become rational: that demons of a thousand shapes assist in making philtrums and charms, whose spiritual bodies are nourished and fattened by the steams of libations and sacrifices: that the ghosts of those, who died violent deaths, use to haunt and appear about their sepulchres. This same egregious philosopher adviseth a wise man not to eat flesh, lest the impure soul of the brute that was put to violent death should enter, along with the flesh, into those who eat it. He adds, as a matter of fact confirmed by many experiments, that those who would insinuate into themselves the souls of such animals as have the gift of foretelling things to come, need only eat a principal part, the heart for instance, of a stag or a mole, and so receive the soul of the animal, which will prophesy in them like a god.* No wonder if men whose minds were preoccupied by faith and tenets of such a peculiar kind should be averse from the reception of the gospel. Upon the whole, we desire to be excused if we do not pay the same deference to the judgment of men that appear to us whimsical, superstitious, weak, and visionary, which those impartial gentlemen do, who admire their talents, and are proud to tread in their footsteps. *Alc.* Men see things in different views: what one admires another contemns; it is even possible for a prejudiced mind, whose attention is turned towards the faults and blemishes of things, to fancy some shadow of defect in those great lights which in our own days have enlightened, and still continue to enlighten, the world.

XXVI. But pray tell me, Crito, what you think of Josephus. He is allowed to have been a man of learn-

* Vide Porphyrium de abstinentia, de sacrificiis, de diis, et dæmonibus.

Digitized by Google

ing and judgment. He was himself an assertor of revealed religion. And Christians, when his authority serves their turn, are used to cite him with respect. *Cri.* All this I acknowledge. *Alc.* Must it not then seem very strange, and very suspicious to every impartial inquirer, that this learned Jew writing the history of his own country, of that very place, and those very times, where and when Jesus Christ made his appearance, should yet say nothing of the character, miracles, and doctrine, of that extraordinary person? Some ancient Christians were so sensible of this, that, to make amends, they inserted a famous passage in that historian; which imposture hath been sufficiently detected by able critics in the last age. *Cri.* Though there are not wanting able critics on the other side of the question, yet, not to enter upon the discussion of that celebrated passage, I am content to give you all you can desire, and suppose it not genuine, but the pious fraud of some wrong-headed Christian, who could not brook the omission in Josephus: but this will never make such omission a real objection against Christianity. Nor is there, for aught I can see, any thing in it whereon to ground either admiration or suspicion; inasmuch as it should seem very natural, supposing the gospel account exactly true, for Josephus to have said nothing of it; considering that the view of that writer was to give his country some figure in the eye of the world, which had been greatly prejudiced against the Jews, and knew little of their history, to which end the life and death of our Saviour would not in any wise have conduced; considering that Josephus could not have been an eye-witness of our Saviour or his miracles; considering that he was a pharisee of quality and learning, foreign as well as Jewish, one of great employment in the state, and that the gospel was preached to the poor; that the first instruments of spreading it, and the first converts to it, were mean and illiterate, that it might not seem the work of

Digitized by Google

man, or beholding to human interest or power; considering the general prejudice of the Jews, who expected in the Messiah a temporal and conquering prince, which prejudice was so strong, that they chose rather to attribute our Saviour's miracles to the devil, than acknowledge him to be the Christ: considering also the hellish disorder and confusion of the Jewish state in the days of Josephus, when men's minds were filled and astonished with unparalleled wars, dissensions, massacres, and seditions, of that devoted people. Laying all these things together, I do not think it strange, that such a man, writing with such a view, at such a time, and in such circumstances, should omit to describe our blessed Saviour's life and death, or to mention his miracles, or to take notice of the state of the Christian church, which was then as a grain of mustard-seed beginning to take root and germinate. And this will seem still less strange, if it be considered, that the apostles in a few years after our Saviour's death departed from Jerusalem, setting themselves to convert the gentiles, and were dispersed throughout the world; that the converts in Jerusalem were, not only of the meanest of the people, but also few; the three thousand, added to the church in one day upon Peter's preaching in that city, appearing to have been not inhabitants but strangers from all parts assembled to celebrate the feast of Pentecost; and that all the time of Josephus and for several years after, during a succession of fifteen bishops, the Christians at Jerusalem observed the Mosaic law,* and were consequently, in outward appearance, one people with the rest of the Jews, which must have made them less observable. I would fain know what reason we have to suppose, that the gospel, which in its first propagation seemed to overlook the great or considerable men of this world, might not also have been overlooked by them, as a thing not suited to their apprehensions and way of thinking?

* Sulp. Sever. Sacr. Hist. lib. ii. et Euseb. Chron. lib. poster.

Digitized by Google

Besides, in those early times might not other learned Jews, as well as Gamaliel,* suspend their judgment of this new way, as not knowing what to make or say of it, being on one hand unable to quit the notions and traditions in which they were brought up, and, on the other, not daring to resist or speak against the gospel, lest they should be found to fight against God? Surely at all events, it could never be expected, that an unconverted Jew should give the same account of the life, miracles, and doctrine, of Jesus Christ, as might become a Christian to have given; nor on the other hand was it at all improbable, that a man of sense should beware to lessen or traduce what, for aught he knew, might have been a heavenly dispensation, between which two courses the middle was to say nothing, but pass it over in a doubtful or a respectful silence. And it is observable, that where this historian occasionally mentions Jesus Christ in his account of St. James's death, he doth it without any reflection, or saying either good or bad, though at the same time he shews a regard for the apostle. It is observable, I say, that speaking of Jesus, his expression is, who was called the Christ, not who pretended to be the Christ, or who was falsely called the Christ, but simply τοῦ λεγομένου Χριστοῦ.† It is evident Josephus knew there was such a man as Jesus, and that he was said to be the Christ, and yet he condemns neither him nor his followers; which to me seems an argument in their favour. Certainly if we suppose Josephus to have known or been persuaded that he was an impostor, it will be difficult to account for his not saying so in plain terms. But if we suppose him in Gamaliel's way of thinking, who suspended his judgment, and was afraid of being found to fight against God, it should seem natural for him to behave in that very manner, which according to you makes against our faith, but I verily think makes for it. But what if Josephus had been a

* Acts v. † Jos. Ant. lib. xx. cap. viii.

Digitized by Google

bigot, or even a Sadducee, an infidel, an atheist? What then! we readily grant there might have been persons of rank, politicians, generals, and men of letters, then as well as now, Jews as well as Englishmen, who believed no revealed religion: and that some such persons might possibly have heard of a man in low life, who performed miracles by magic, without informing themselves, or perhaps ever inquiring, about his mission and doctrine. Upon the whole, I cannot comprehend, why any man should conclude against the truth of the gospel, from Josephus's omitting to speak of it, any more than from his omitting to embrace it. Had the first Christians been chief priests and rulers, or men of science and learning, like Philo and Josephus, it might perhaps with better colour have been objected, that their religion was of human contrivance, than now that it hath pleased God by weak things to confound the strong. This I think sufficiently accounts, why in the beginning the gospel might overlook or be overlooked by men of a certain rank and character.

XXVII. *Alc.* And yet it seems an odd argument in proof of any doctrine, that it was preached by simple people to simple people. *Cri.* Indeed if there was no other attestation to the truth of the Christian religion, this must be owned a very weak one. But if a doctrine begun by instruments, mean as to all human advantages, and making its first progress among those who had neither wealth nor art nor power to grace or encourage it, should in a short time, by its own innate excellency, the mighty force of miracles, and the demonstration of the Spirit, not only without but against all worldly motives spread through the world, and subdue men of all ranks and conditions of life, would it not be very unreasonable to reject or suspect it for the want of human means? and might not this with much better reason be thought an argument of its coming from God? *Alc.* But still an inquisitive man will want the testimony of men of learning and knowledge. *Cri.* But from the first

Digitized by Google

century onwards, there was never wanting the testimony of such men, who wrote learnedly in defence of the Christian religion, who lived, many of them, when the memory of things was fresh, who had abilities to judge and means to know, and who gave the clearest proofs of their conviction and sincerity. *Alc.* But all the while these men were Christians, prejudiced Christians, and therefore their testimony is to be suspected. *Cri.* It seems then you would have Jews or heathens attest the truths of Christianity? *Alc.* That is the very thing I want. *Cri.* But how can this be? Or if it could, would not any rational man be apt to suspect such evidence, and ask how it was possible for a man really to believe such things himself and not become a Christian? The apostles and first converts were themselves Jews, and brought up in a veneration for the law of Moses, and in all the prejudices of that people: many fathers, Christian philosophers, and learned apologists for the faith, who had been bred gentiles, were without doubt imbued with prejudices of education: and if the finger of God and force of truth converted both the one and the other from Judaism or gentilism, in spite of their prejudices to Christianity, is not their testimony so much the stronger? You have then the suffrages of both Jews and gentiles, attesting to the truth of our religion in the earliest ages. But to expect or desire the attestation of Jews remaining Jews, or of gentiles remaining gentiles, seems unreasonable: nor can it be imagined that the testimony of men, who were not converted themselves, should be the likeliest to convert others. We have indeed the testimony of heathen writers to prove, that about the time of our Saviour's birth there was a general expectation in the east of a Messiah or Prince, who should found a new dominion: that there were such people as Christians: that they were cruelly persecuted and put to death: that they were innocent and holy in life and worship: and that there did really exist in that

Digitized by Google

time, certain persons and facts mentioned in the New Testament: and for other points, we have learned fathers; several of whom had been, as I already observed, bred heathens, to attest their truth. *Alc.* For my part I have no great opinion of the capacity or learning of the fathers, and many learned men, especially of the reformed churches abroad, are of the same mind, which saves me the trouble of looking myself into their voluminous writings. *Cri.* I shall not take upon me to say, with the minute philosopher Pomponatius,* that Origen, Basil, Augustin, and divers other fathers; were equal to Plato, Aristotle, and the greatest of the gentiles in human knowledge. But if I may be allowed to make a judgment from what I have seen of their writings, I should think several of them men of great parts, eloquence, and learning, and much superior to those who seem to undervalue them. Without any affront to certain modern critics or translators, Erasmus may be allowed a man of fine taste, and a fit judge of sense and good writing, though his judgment in this point was very different from theirs. Some of our reformed brethren, because the Romanists attribute too much, seem to have attributed too little to them, from a very usual though no very judicious opposition; which is apt to lead men to remark defects, without making proper allowances, and to say things which neither piety, candour, nor good sense, requires them to say.

XXVIII. *Alc.* But though I should acknowledge, that a concurring testimony of many learned and able men throughout the first ages of Christianity may have its weight, yet when I consider the great number of forgeries and heresies that sprung up in those times, it very much weakens their credit. *Cri.* Pray, Alciphron, would it be allowed a good argument in the mouth of a papist against the Reformation, that many absurd sects sprung up at the same time with it? Are we to wonder,

* Lib. de Immortalitate Animæ.

Digitized by Google

that when good seed is sowing, the enemy should sow tares? But at once to cut off several objections, let us suppose in fact, what you do not deny possible, that there is a God, a devil, and a revelation from heaven committed to writing many centuries ago. Do but take a view of human nature, and consider what would probably follow from such a supposition; and whether it is not very likely there should be half-believers, mistaken bigots, holy frauds, ambitious, interested, disputing, conceited, schismatical, heretical, absurd men, among the professors of such revealed religion, as well as after a course of ages, various readings, omissions transpositions, and obscurities, in the text of the sacred oracles? And if so, I leave you to judge, whether it be reasonable to make those events an objection against the being of a thing which would probably and naturally follow upon the supposal of its being? *Alc.* After all, say what you will, this variety of opinions must needs shake the faith of a reasonable man. Where there are so many different opinions on the same point it is very certain they cannot all be true, but it is certain they may all be false. And the means to find out the truth! when a man of sense sets about this inquiry, he finds himself on a sudden startled and amused with hard words and knotty questions. This makes him abandon the pursuit, thinking the game not worth the chase. *Cri.* But would not this man of sense do well to consider, it must argue want of discernment, to reject Divine truths for the sake of human follies? Use but the same candour and impartiality in treating of religion, that you would think proper on other subjects. We desire no more, and expect no less. In law, in physic, in politics, wherever men have refined, is it not evident they have been always apt to run into disputes and chicane? But will that hinder you from admitting, there are many good rules, and just notions, and useful truths, in all those professions? Physicians may dispute, perhaps, vainly and

Digitized by Google

unintelligibly about the animal system: they may assign different causes of distempers, some explaining them by the elementary qualities, hot and cold, moist and dry, yet this doth not hinder, but the bark may be good for an ague, and rhubarb for a flux. Nor can it others by chemical, others by mechanical principles, be inferred from the different sects, which from time to time have sprung up in that profession, the dogmatic, for instance, empiric, methodic, Galenic, Paracelsian, or the hard words and knotty questions and idle theories which have grown from them, or been engrafted on them, that, therefore, we should deny the circulation of the blood, or reject their excellent rules about exercise, air, and diet. *Alc.* It seems you would screen religion by the example of other professions, all which have produced sects and disputes as well as Christianity, which may in itself be true and useful, notwithstanding many false and fruitless notions engrafted on it by the wit of man. Certainly if this had been observed or believed by many acute reasoners, they would never have made the multiplicity of religious opinions and controversies an argument against religion in general. *Cri.* How such an obvious truth should escape men of sense and inquiry I leave you to account: but I can very easily account for gross mistakes in those, who pass for free-thinkers without ever thinking; or, if they do think, whose meditations are employed on other points of a very different nature, from a serious and impartial inquiry about religion.

XXIX. But to return: what or where is the profession of men, who never split into schisms, or never talk nonsense? Is it not evident, that out of all the kinds of knowledge on which the human mind is employed, there grow certain excrescences, which may be pared off, like the clippings of hair or nails in the body, and with no worse consequence? Whatever bigots or enthusiasts, whatever national or scholastic divines may say or think, it is certain the faith derived from Christ and his apos-

Digitized by Google

tles, was not a piece of empty sophistry; they did not deliver and transmit down to us κενὴν ἀπάτην but γυμνὴν γνώμην, to use the expression of a holy confessor.* And to pretend to demolish their foundation for the sake of human superstructure, be it hay or stubble, or what it will, is no argument of just thought or reason; any more than it is of fairness, to suppose a doubtful sense fixed, and argue from one side of the question in disputed points. Whether, for instance, the beginning of Genesis is to be understood in a literal or allegorical sense? Whether the book of Job be a history or a parable? being points disputed between Christians, an infidel can have no right to argue from one side of the question, in those or the like cases. This or that tenet of a sect, this or that controverted notion, is not what we contend for at present, but the general faith taught by Christ and his apostles, and preserved by universal and perpetual tradition in all the churches down to our own times. To tax or strike at this Divine doctrine, on account of things foreign and adventitious, the speculations and disputes of curious men, is in my mind an absurdity of the same kind, as it would be to cut down a fine tree yielding fruit and shade, because its leaves afforded nourishment to caterpillars, or because spiders may now and then weave cobwebs among the branches. *Alc.* To divide and distinguish would take time. We have several gentlemen very capable of judging in the gross, but who want attention for irksome and dry studies or minute inquiries. To which as it would be very hard to oblige men against their will, so it must be a great wrong to the world, as well as themselves, to debar them from the right of deciding according to their natural sense of things. *Cri.* It were to be wished those capable men would employ their judgment and attention on the same objects. If theological inquiries are unpalatable, the field of nature is wide. How many disco-

* Soc. Histor. Eccles. lib. i.

Digitized by Google

veries are to be made! how many errors to be corrected in arts and sciences! how many vices to be reformed in life and manners! Why do men single out such points as are innocent and useful, when there are so many pernicious mistakes to be amended? Why set themselves to destroy the hopes of human kind and encouragements to virtue? Why delight to judge where they disdain to inquire? Why not employ their noble talents on the longitude or perpetual motion? *Alc.* I wonder you should not see the difference between points of curiosity and religion. Those employ only men of a genius or humour suited to them; but all mankind have a right to censure, and are concerned to judge of these, except they will blindly submit to be governed, by the stale wisdom of their ancestors and the established laws of their country. *Cri.* It should seem, if they are concerned to judge, they are not less concerned to examine before they judge. *Alc.* But after all the examination and inquiry that mortal man can make about revealed religion, it is impossible to come at any rational sure footing.

XXX. There is, indeed, a deal of specious talk about faith founded upon miracles; but when I examine this matter thoroughly, and trace Christian faith up to its original, I find it rests upon much darkness and scruple and uncertainty. Instead of points evident or agreeable to human reason, I find a wonderful narrative of the Son of God tempted in the wilderness by the devil, a thing utterly unaccountable, without any end, or use, or reason, whatsoever. I meet with strange histories of apparitions, of angels and voices from heaven, with surprising accounts of demoniacs, things quite out of the road of common sense and observation, with several incredible feats said to have been done by Divine power, but more probably the inventions of men: nor the less likely to be so, because I cannot pretend to say with what view they were invented. Designs deeply laid are dark, and the less we know the more we suspect: but,

Digitized by Google

admitting them for true, I shall not allow them to be miraculous, until I thoroughly know the power of what are called second causes, and the force of magic. *Cri.* You seem, Alciphron, to analyse, not faith, but infidelity, and trace it to its principles; which, from your own account, I collect to be dark and doubtful scruples and surmises, hastiness in judging, and narrowness in thinking, grounded on a fanciful notion which overrates the little scantling of your own experience, and on real ignorance of the views of Providence, and of the qualities, operations, and mutual respects, of the several kinds of beings, which are, or may be, for aught you know, in the universe. Thus obscure, uncertain, conceited, and conjectural, are the principles of infidelity. Whereas on the other hand, the principles of faith seem to be points plain and clear. It is a clear point, that this faith in Christ was spread abroad throughout the world soon after his death. It is a clear point, that this was not effected by human learning, politics, or power. It is a clear point, that in the early times of the church there were several men of knowledge and integrity, who embraced this faith not from any, but against all, temporal motives. It is a clear point, that, the nearer they were to the fountain-head, the more opportunity they had to satisfy themselves as to the truth of these facts which they believed. It is a clear point, that the less interest there was to persuade, the more need there was of evidence to convince them. It is a clear point, that they relied on the authority of those who declared themselves eye-witnesses of the miracles and resurrection of Christ. It is a clear point, that those professed eye-witnesses suffered much for this their attestation, and finally sealed it with their blood. It is a clear point, that these witnesses, weak and contemptible as they were, overcame the world, spread more light, preached purer morals, and did more benefit to mankind, than all the philosophers and sages put together. These points appear to

Digitized by Google

me clear and sure, and, being allowed such, they are plain, just, and reasonable, motives of assent; they stand upon no fallacious ground, they contain nothing beyond our sphere, neither supposing more knowledge nor other faculties than we are really masters of; and if they should not be admitted for morally certain, as I believe they will by fair and unprejudiced inquirers, yet the allowing them to be only probable is sufficient to stop the mouth of an infidel. These plain points, I say, are the pillars of our faith, and not those obscure ones by you supposed, which are in truth the unsound uncertain principles of infidelity, to a rash, prejudiced, and assuming spirit. To raise an argument, or answer an objection, from hidden powers of nature or magic, is groping in the dark; but by the evident light of sense men might be sufficiently certified of sensible effects, and matters of fact, such as the miracles and resurrection of Christ: and the testimony of such men may be transmitted to after-ages, with the same moral certainty as other historical narrations: and those same miraculous facts, compared by reason with the doctrines they were brought to prove, do afford to an unbiassed mind strong indications of their coming from God, or a superior principle, whose goodness retrieved the moral world, whose power commanded the natural, and whose providence extended over both. Give me leave to say, that nothing dark, nothing incomprehensible, or mysterious, or unaccountable, is the ground or motive, the principle or foundation, the proof or reason, of our faith, although it may be the object of it. For it must be owned, that, if by clear and sure principles we are rationally led to believe a point less clear, we do not therefore reject such point, because it is mysterious to conceive, or difficult to account for, nor would it be right so to do. As for Jews and gentiles, anciently attributing our Saviour's miracles to magic, this is so far from being a proof against them, that to me it seems rather a proof of the facts,

Digitized by Google

without disproving the cause to which we ascribe them. As we do not pretend to know the nature and operations of demons, the history, laws, and system, of rational beings, and the schemes or views of Providence, so far as to account for every action and appearance recorded in the gospel; so neither do you know enough of those things, to be able from that knowledge of yours to object against accounts so well attested. It is an easy matter to raise scruples upon many authentic parts of civil history, which, requiring a more perfect knowledge of facts, circumstances, and councils, than we can come at to explain them, must be to us inexplicable. And this is still more easy with respect to the history of nature, in which, if surmises were admitted for proofs against things odd, strange, and unaccountable, if our scanty experience were made the rule and measure of truth, and all those phenomena rejected, that we, through ignorance of the principles, and laws, and system of nature, could not explain, we should indeed make discoveries, but it would be only of our own blindness and presumption. And why men that are so easily and so often gravelled in common points, in things natural and visible, should yet be so sharp-sighted and dogmatical about the invisible world, and its mysteries, is to me a point utterly unaccountable by all the rules of logic and good sense. Upon the whole, therefore, I cannot help thinking there are points sufficiently plain, and clear, and full, whereon a man may ground a reasonable faith in Christ: but that the attacks of minute philosophers against this faith are grounded upon darkness, ignorance, and presumption. *Alc.* I doubt I shall still remain in the dark as to the proofs of the Christian religion, and always presume there is nothing in them.

XXXI. For how is it possible, at this remote distance, to arrive at any knowledge, or frame any demonstration, about it? *Cri.* What then? Knowledge, I grant, in a strict sense, cannot be had without evidence

Digitized by Google

or demonstration; but probable arguments are a sufficient ground of faith. Who ever supposed that scientifical proofs were necessary to make a Christian? Faith alone is required; and provided that, in the main and upon the whole, men are persuaded, this saving faith may consist with some degrees of obscurity, scruple, and error. For although the light of truth be unchangeable, and the same in its eternal source, the Father of Lights: yet, with respect to us, it is variously weakened and obscured, by passing through a long distance or gross medium, where it is intercepted, distorted, or tinctured, by the prejudices and passions of men. But all this notwithstanding, he that will use his eyes may see enough for the purposes either of nature, or of grace; though by a light, dimmer indeed, or clearer, according to the place, or the distance, or the hour, of the medium. And it will be sufficient, if such analogy appears between the dispensations of grace and nature, as may make it probable (although much should be unaccountable in both) to suppose them derived from the same author, and the workmanship of one and the same hand. *Alc.* Those who saw and touched and handled Jesus Christ after his resurrection, if there were any such, may be said to have seen by a clear light: but to us the light is very dim, and yet it is expected we should believe this point as well as they. For my part, I believe, with Spinosa, that Christ's death was literal, but his resurrection allegorical.* *Cri.* And for my part, I can see nothing in this celebrated infidel, that should make me desert matters of fact, and moral evidence, to adopt his notions. Though I must needs own I admit an allegorical resurrection that proves the real, to wit, a resurrection of Christ's disciples from weakness to resolution, from fear to courage, from despair to hope, of which, for aught I can see, no rational account can be given, but the sensible evidence that our Lord was truly,

* Vide Spinosæ Epist. ad Oldenburgium.

Digitized by Google

really, and literally, risen from the dead: but as it cannot be denied that his disciples, who were eye-witnesses of his miracles and resurrection, had stronger evidence than we can have of those points; so it cannot be denied, that such evidence was then more necessary, to induce men to embrace a new institution, contrary to the whole system of their education, their prejudices, their passions, their interests, and every human motive. Though to me it seems, the moral evidence and probable arguments within our reach, are abundantly sufficient to make prudent thinking men adhere to the faith, handed down to us from our ancestors, established by the laws of our country, requiring submission in points above our knowledge, and for the rest recommending doctrines the most agreeable to our interest and our reason. And, however strong the light might have been at the fountain-head, yet its long continuance and propagation, by such unpromising instruments throughout the world, have been very wonderful. We may now take a more comprehensive view of the connexion, order, and progress, of the Divine dispensations, and, by a retrospect on a long series of past ages, perceive a unity of design running throughout the whole, a gradual disclosing and fulfilling the purposes of Providence, a regular progress from types to antitypes, from things carnal to things spiritual, from earth to heaven. We may behold Christ crucified, that stumbling-block to the Jews, and foolishness to the Greeks, putting a final period to the temple-worship of the one, and the idolatry of the other; and that stone, which was cut out of the mountain without hands, and brake in pieces all other kingdoms, become itself a great mountain.

XXXII. If a due reflection on these things be not sufficient to beget a reverence for the Christian faith in the minds of men, I should rather impute it to any other cause, than a wise and cautious incredulity: when I see their easiness of faith in the common concerns of

Digitized by Google

life, where there is no prejudice or appetite to bias or disturb their natural judgment: when I see those very men that in religion will not stir a step without evidence, and at every turn expect demonstration, trust their health to a physician, and their lives to a sailor, with an implicit faith, I cannot think they deserve the honour of being thought more incredulous than other men, or that they are more accustomed to know, and for this reason less inclined to believe. On the contrary, one is tempted to suspect, that ignorance hath a greater share than science in our modern infidelity, and that it proceeds more from a wrong head, or an irregular will, than from deep researches. *Lys.* We do not, it must be owned, think that learning or deep researches are necessary to pass right judgments upon things. I sometimes suspect that learning is apt to produce and justify whims, and sincerely believe we should do better without it. Our sect are divided on this point, but much the greater part think with me. I have heard more than once very observing men remark, that learning was the true human means which preserved religion in the world, and that, if we had it in our power to prefer blockheads in the church, all would soon be right. *Cri.* Men must be strangely in love with their opinions, to put out their eyes rather than part with them. But it has been often remarked, by observing men, that there are no greater bigots than infidels. *Lys.* What! a free-thinker and a bigot, impossible! *Cri.* Not so impossible neither, that an infidel should be bigoted to his infidelity. Methinks I see a bigot, wherever I see a man overbearing and positive without knowing why, laying the greatest stress on points of smallest moment, hasty to judge of the conscience, thoughts, and inward views, of other men, impatient of reasoning against his own opinions, and choosing them with inclination rather than judgment, an enemy to learning, and attached to mean authorities.

Digitized by Google

How far our modern infidels agree with this description, I leave to be considered by those who really consider and think for themselves. *Lys.* We are no bigots, we are men that discover difficulties in religion, that tie knots and raise scruples; which disturb the repose and interrupt the golden dreams of bigots, who therefore cannot endure us. *Cri.* They who cast about for difficulties, will be sure to find or make them upon every subject: but he that would, upon the foot of reason, erect himself into a judge, in order to make a wise judgment on a subject of that nature, will not only consider the doubtful and difficult parts of it, but take a comprehensive view of the whole, consider it in all its parts and relations, trace it to its original, examine its principles, effects, and tendencies, its proofs internal and external; he will distinguish between the clear points and the obscure, the certain and the uncertain, the essential and circumstantial, between what is genuine and what foreign: he will consider the different sorts of proof that belong to different things, where evidence is to be expected, where probability may suffice, and where it is reasonable to suppose there should be doubts and scruples: he will proportion his pains and exactness to the importance of the inquiry, and check that disposition of his mind to conclude all those notions, groundless prejudices, with which it was imbued before it knew the reason of them: He will silence his passions, and listen to truth: he will endeavour to untie knots as well as to tie them, and dwell rather on the light parts of things than the obscure: he will balance the force of his understanding with the difficulty of the subject, and, to render his judgment impartial, hear evidence on all sides, and, so far as he is led by authority, choose to follow that of the honestest and wisest men. Now it is my sincere opinion, the Christian religion may well stand the test of such an inquiry. *Lys.* But such an

Digitized by Google

inquiry would cost too much pains and time. We have thought of another method, the bringing religion to the test of wit and humour: this we find a much shorter, easier, and more effectual way. And as all enemies are at liberty to choose their weapons, we make choice of those we are most expert at: and we are the better pleased with this choice, having observed that of all things a solid divine hates a jest. To consider the whole of the subject, to read and think on all sides, to object plainly, and answer directly, upon the foot of dry reason and argument, would be a very tedious and troublesome affair. Besides, it is attacking pedants at their own weapons. How much more delicate and artful is it, to give a hint, to cover one's self with an enigma, to drop a *double entendre*, to keep it in one's power to recover, and slip aside, and leave his antagonist beating the air! This hath been practised with great success, and I believe it the top method to gain proselytes, and confound pedants. *Cri.* I have seen several things written in this way, which, I suppose, were copied from the behaviour of a sly sort of scorners one may sometimes meet with. Suppose a conceited man that would pass for witty, tipping the wink upon one, thrusting out his tongue at another; one while waggishly smiling, another with a grave mouth and ludicrous eyes; often affecting the countenance of one who smothered a jest, and sometimes bursting out in a horse-laugh: what a figure would this be, I will not say in the senate or council, but in a private visit among well-bred men! And yet this is the figure that certain great authors, who in this age would pass for models, and do pass for models, make in their polite and elaborate writings on the most weighty points. *Alc.* I who profess myself an admirer, an adorer of reason, am obliged to own, that in some cases the sharpness of ridicule can do more than the strength of argument. But if we exert ourselves in the use of

Digitized by Google

mirth and humour, it is not for want of other weapons. It shall never be said, that a free-thinker was afraid of reasoning. No, Crito, we have reasons in store, the best are yet to come; and if we can find an hour for another conference before we set out to-morrow morning, I will undertake you shall be plied with reasons, as clear, and home, and close to the point, as you could wish.

Digitized by Google

THE SEVENTH DIALOGUE.

I. Christian faith impossible. II. Words stand for ideas. III. No knowledge or faith without ideas. IV. Grace no idea of it. V. Abstract ideas what, and how made. VI. Abstract general ideas impossible. VII. In what sense there may be general ideas. VIII. Suggesting ideas not the only use of words. IX. Force as difficult to form an idea of as grace. X. Notwithstanding which, useful propositions may be formed concerning it. XI. Belief of the Trinity and other mysteries not absurd. XII. Mistakes about faith an occasion of profane raillery. XIII. Faith, its true nature and effects. XIV. Illustrated by science. XV. By arithmetic in particular. XVI. Sciences conversant about signs. XVII. The true end of speech, reason, science, and faith. XVIII. Metaphysical objections as strong against human science as articles of faith. XIX. No religion, because no human liberty. XX. Further proof against human liberty. XXI. Fatalism a consequence of erroneous suppositions. XXII. Man an accountable agent. XXIII. Inconsistency, singularity, and credulity, of minute philosophers. XXIV. Untrodden paths and new light of the minute philosophers. XXV. Sophistry of the minute philosophers. XXVI. Minute philosophers ambiguous, enigmatical, unfathomable. XXVII. Scepticism of the minute philosophers. XXVIII. How a sceptic ought to behave. XXIX. Minute philosophers, why difficult to convince. XXX. Thinking, not the epidemical evil of these times. XXXI. Infidelity, not an effect of reason or thought: its true motives assigned. XXXII. Variety of opinions about religion, effects thereof. XXXIII. Method for proceeding with minute philosophers. XXXIV. Want of thought, and want of education, defects of the present age.

I. The philosophers having resolved to set out for London next morning, we assembled at break of day in the library. Alciphron began with a declaration of his sincerity, assuring us he had very maturely and with a most unbiassed mind considered all that had been said the day before. He added, that upon the whole he could not deny several probable reasons were produced for embracing the Christian faith. But, said he, those reasons

Digitized by Google

being only probable can never prevail against absolute certainty and demonstration. If therefore I can demonstrate your religion to be a thing altogether absurd and inconsistent, your probable arguments in its defence do from that moment lose their force, and with it all right to be answered or considered. The concurring testimony of sincere and able witnesses hath without question great weight in human affairs. I will even grant that things odd and unaccountable to human judgment or experience, may sometimes claim our assent on that sole motive. And I will also grant it possible, for a tradition to be conveyed with moral evidence through many centuries. But at the same time you will grant to me, that a thing demonstrably and palpably false is not to be admitted on any testimony whatever, which at best can never amount to demonstration. To be plain, no testimony can make nonsense sense; no moral evidence can make contradictions consistent. Know then, that as the strength of our cause doth not depend upon, so neither is it to be decided by any critical points of history, chronology, or languages. You are not to wonder, if the same sort of tradition and moral proof, which governs our assent with respect to facts in civil or natural history, is not admitted as a sufficient voucher for metaphysical absurdities and absolute impossibilities. Things obscure and unaccountable in human affairs, or the operations of nature, may yet be possible, and, if well attested, may be assented unto: but religious assent or faith can be evidently shewn in its own nature to be impracticable, impossible, and absurd. This is the primary motive to infidelity. This is our citadel and fortress, which may, indeed, be graced with outworks of various erudition, but, if those are demolished, remains in itself and of its own proper strength impregnable. *Euph.* This, it must be owned, reduceth our inquiry within a narrow compass: do but make out this, and I shall have nothing more to say. *Alc.* Know then, that the shallow mind of the vul-

Digitized by Google

gar, as it dwells only on the outward surface of things, and considers them in the gross, may be easily imposed on. Hence a blind reverence for religious faith and mystery. But when an acute philosopher comes to dissect and analyse these points, the imposture plainly appears: and as he has no blindness, so he has no reverence for empty notions, or, to speak more properly, for mere forms of speech, which mean nothing, and are of no use to mankind.

II. Words are signs: they do or should stand for ideas; which so far as they suggest they are significant. But words that suggest no ideas are insignificant. He who annexeth a clear idea to every word he makes use of speaks sense; but where such ideas are wanting, the speaker utters nonsense. In order therefore to know whether any man's speech be senseless and insignificant, we have nothing to do but lay aside the words, and consider the ideas suggested by them. Men, not being able immediately to communicate their ideas one to another, are obliged to make use of sensible signs or words; the use of which is to raise those ideas in the hearer which are in the mind of the speaker: and if they fail of this end they serve to no purpose. He who really thinks hath a train of ideas succeeding each other and connected in his mind: and when he expresseth himself by discourse, each word suggests a distinct idea to the hearer or reader; who by that means hath the same train of ideas in his, which was in the mind of the speaker or writer. As far as this effect is produced, so far the discourse is intelligible, hath sense and meaning. Hence it follows, that whoever can be supposed to understand what he reads or hears, must have a train of ideas raised in his mind, correspondent to the train of words read or heard. These plain truths, to which men readily assent in theory, are but little attended to in practice, and therefore deserve to be enlarged on and inculcated, however obvious and undeniable. Mankind are generally

Digitized by Google

averse from thinking, though apt enough to entertain discourse either in themselves or others: the effect whereof is, that their minds are rather stored with names than ideas, the husk of science rather than the thing. And yet these words without meaning do often make distinctions of parties, the subject matter of their disputes, and the object of their zeal. This is the most general course of error, which doth not influence ordinary minds alone, but even those who pass for acute and learned philosophers are often employed about names instead of things or ideas, and are supposed to know when they only pronounce hard words without a meaning.

III. Though it is evident that as knowledge is the perception of the connexion or disagreement between ideas, he who doth not distinctly perceive the ideas marked by the terms, so as to form a mental proposition answering to the verbal, cannot possibly have knowledge: no more can he be said to have opinion or faith which imply a weaker assent, but still it must be to a proposition, the terms of which are understood as clearly, although the agreement or disagreement of the ideas may not be so evident as in the case of knowledge. I say, all degrees of assent, whether founded on reason or authority, more or less cogent, are internal acts of the mind which alike terminate in ideas as their proper object: without which there can be really no such thing as knowledge, faith, or opinion. We may perhaps raise a dust and disputes about tenets purely verbal; but what is this at bottom more than mere trifling? All which will be easily admitted with respect to human learning and science; wherein it is an allowed method to expose any doctrine or tenet by stripping them of the words, and examining what ideas are underneath, or whether any ideas at all? This is often found the shortest way to end disputes, which might otherwise grow and multiply without end, the litigants neither understanding one another nor themselves. It were needless

Digitized by Google

to illustrate what shines by its own light, and is admitted by all thinking men. My endeavour shall be only to apply it in the present case. I suppose I need not be at any pains to prove, that the same rules of reason and good sense which obtain in all other subjects ought to take place in religion. As for those who consider faith and reason as two distinct provinces, and would have us think good sense has nothing to do where it is most concerned, I am resolved never to argue with such men, but leave them in quiet possession of their prejudices. And now, for the particular application of what I have said, I shall not single out any nice disputed points of school divinity, or those that relate to the nature and essence of God, which being allowed infinite you might pretend to screen them, under the general notion of difficulties attending the nature of infinity.

IV. Grace is the main point in the Christian dispensation, nothing is oftener mentioned or more considered throughout the New Testament; wherein it is represented as somewhat of a very particular kind, distinct from any thing revealed to the Jews, or known by the light of nature. This same grace is spoken of as the gift of God, as coming by Jesus Christ, as reigning, as abounding, as operating. Men are said to speak through grace, to believe through grace. Mention is made of the glory of grace, the riches of grace, the stewards of grace. Christians are said to be heirs of grace, to receive grace, grow in grace, be strong in grace, to stand in grace, and to fall from grace. And lastly, grace is said to justify and to save them. Hence Christianity is styled the covenant or dispensation of grace. And it is well known that no point hath created more controversy in the church than this doctrine of grace. What disputes about its nature, extent, and effects, about universal, efficacious, sufficient, preventing, irresistible grace, have employed the pens of protestant as well as popish divines, of Jansenists and Moli-

Digitized by Google

nists, of Lutherans, Calvinists, and Arminians, as I have not the least curiosity to know, so I need not say! It sufficeth to observe, that there have been and are still subsisting great contests upon these points. Only one thing I should desire to be informed of, to wit, what is the clear and distinct idea marked by the word grace? I presume a man may know the bare meaning of a term, without going into the depth of all those learned inquiries. This surely is an easy matter, provided there is an idea annexed to such term. And if there is not, it can be neither the subject of a rational dispute, nor the object of real faith. Men may indeed impose upon themselves or others, and pretend to argue and believe, when at bottom there is no argument or belief, further than mere verbal trifling. Grace taken in the vulgar sense, either for beauty, or favour, I can easily understand. But when it denotes an active, vital, ruling principle, influencing and operating on the mind of man, distinct from every natural power or motive, I profess myself altogether unable to understand it, or frame any distinct idea of it; and therefore I cannot assent to any proposition concerning it, nor consequently have any faith about it: and it is a self-evident truth, that God obligeth no man to impossibilities. At the request of a philosophical friend, I did cast an eye on the writings he shewed me of some divines, and talked with others on this subject, but after all I had read or heard could make nothing of it, having always found, whenever I laid aside the word *grace*, and looked into my own mind, a perfect vacuity or privation of all ideas. And, as I am apt to think men's minds and faculties are made much alike, I suspect that other men, if they examined what they call grace with the same exactness and indifference, would agree with me, that there was nothing in it but an empty name. This is not the only instance, where a word often heard and pronounced is believed intelligible, for no other reason but because it is familiar.

Digitized by Google

Of the same kind are many other points reputed necessary articles of faith. That which in the present case imposeth upon mankind I take to be partly this. Men speak of this holy principle as of something that acts, moves, and determines, taking their ideas from corporeal things, from motion and the force or *momentum* of bodies, which being of an obvious and sensible nature they substitute in place of a thing spiritual and incomprehensible, which is a manifest delusion. For though the idea of corporeal force be never so clear and intelligible, it will not therefore follow that the idea of grace, a thing perfectly incorporeal, must be so too. And though we may reason distinctly, perceive, assent, and form opinions about the one, it will by no means follow that we can do so of the other. Thus it comes to pass, that a clear sensible idea of what is real produceth, or rather is made a pretence for, an imaginary spiritual faith that terminates in no object; a thing impossible! For there can be no assent where there are no ideas: and where there is no assent there can be no faith: and what cannot be, that no man is obliged to. This is as clear as any thing in Euclid.

V. The same method of reasoning may be applied by any man of sense, to confute all other the most essential articles of the Christian faith. You are not therefore to wonder that a man who proceeds on such solid grounds, such clear and evident principles, should be deaf to all you can say from moral evidence, or probable arguments, which are nothing in the balance against demonstration. *Euph.* The more light and force there are in this discourse, the more you are to blame for not having produced it sooner. For my part, I should never have said one word against evidence. But let me see whether I understand you rightly. You say, every word in an intelligible discourse must stand for an idea; which ideas as far as they are clearly and distinctly apprehended, so far the discourse hath meaning, without

Digitized by Google

which it is useless and insignificant. *Alc.* I do. *Euph.* For instance, when I hear the words *man, triangle, colour*, pronounced; they must excite in my mind distinct ideas of those things whereof they are signs, otherwise I cannot be said to understand them. *Alc.* Right. *Euph.* And this is the only true use of language? *Alc.* That is what I affirm. *Euph.* But every time the word *man* occurs in reading or conversation, I am not conscious that the particular distinct idea of a man is excited in my mind. For instance, when I read in St. Paul's Epistle to the Galatians these words, "If a man thinketh himself to be something, when he is nothing, he deceiveth himself;" methinks I comprehend the force and meaning of this proposition, although I do not frame to myself the particular distinct idea of a man. *Alc.* It is very true, you do not form in your mind the particular idea of Peter, James, or John, of a fair or a black, a tall or a low, a fat or a lean, a straight or a crooked, a wise or a foolish, a sleeping or waking man, but the abstract general idea of *man*, prescinding from, and exclusive of, all particular shape, size, complexion, passions, faculties, and every individual circumstance. To explain this matter more fully, you are to understand there is in the human mind, a faculty of contemplating the general nature of things, separate from all those particularities which distinguish the individuals one from another. For example, in Peter, James, and John, you may observe in each a certain collection of stature, figure, colour, and other peculiar properties by which they are known asunder, distinguished from all other men, and, if I may so say, individuated. Now leaving out of the idea of a man, that which is peculiar to the individual, and retaining only that which is common to all men, you form an abstract universal idea of *man* or *human nature*, which includes no particular stature, shape, colour, or other quality, whether of mind or body. After the same manner you may observe particular tri-

Digitized by Google

angles to differ one from another, as their sides are equal or unequal, and their angles greater or lesser; whence they are denominated equilateral, equicrural, or scalenum, obtusangular, acutangular, or rectangular. But the mind excluding out of its ideas, all these peculiar properties and distinctions, frameth the general abstract idea of a triangle; which is neither equilateral, equicrural, nor scalenum, neither obtusangular, acutangular, nor rectangular, but all and none of these at once.* The same may be said of the general abstract idea of colour, which is something distinct from and exclusive of blue, red, green, yellow, and ever other particular colour, including only that general essence in which they all agree. And what has been said of these three general names, and the abstract general ideas they stand for, may be applied to all others. For you must know, that particular things or ideas being infinite, if each were marked or signified by a distinct proper name, words must have been innumerable, and language an endless impossible thing. Hence it comes to pass, that appellative or general names stand, immediately and properly, not for particular but for abstract general ideas, which they never fail to excite in the mind, as oft as they are used to any significant purpose. And without this, there could be no communication or enlargement of knowledge, no such thing as universal science or theorems of any kind. Now for understanding any proposition or discourse, it is sufficient that distinct ideas are thereby raised in your mind, correspondent to those in the speaker's, whether the ideas so raised are particular, or only abstract and general ideas. Forasmuch, nevertheless, as these are not so obvious and familiar to vulgar minds, it happens that some men may think they have no idea at all, when they have not a particular idea; but the truth is, you had the abstract general idea of man, in the instance assigned, wherein

* See Locke on Human Understanding, book iv. cap. vii.

Digitized by Google

you thought you had none. After the same manner, when it is said, that the three angles of a triangle are equal to two right ones; or that colour is the object of sight, it is evident the words do not stand for this or that triangle or colour, but for abstract general ideas, excluding every thing peculiar to the individuals, and including only the universal nature common to the whole kind of triangles or of colours.

VI. *Euph.* Tell me, Alciphron, are those abstract general ideas clear and distinct? *Alc.* They are above all others clear and distinct, being the only proper object of science, which is altogether conversant about universals. *Euph.* And do you not think it very possible for any man to know, whether he has this or that clear and distinct idea or no? *Alc.* Doubtless. To know this he needs only examine his own thoughts and look into his own mind. *Euph.* But upon looking into my own mind, I do not find that I have or can have these general abstract ideas of a man or a triangle abovementioned, or of colour prescinded from all particular colours.* Though I shut mine eyes, and use mine utmost efforts, and reflect on all that passeth in my own mind, I find it utterly impossible to form such ideas. *Alc.* To reflect with due attention, and turn the mind inward upon itself, is a difficult task, and not every one's talent. *Euph.* Not to insist on what you allowed, that every one might easily know for himself whether he has this or that idea or no; I am tempted to think nobody else can form those ideas any more than I can. Pray, Alciphron, which are those things you would call absolutely impossible? *Alc.* Such as include a contradiction. *Euph.* Can you frame an idea of what includes a contradiction? *Alc.* I cannot. *Euph.* Consequently whatever is absolutely impossible you cannot form an

* See the Introduction to a Treatise concerning the Principles of Human Knowledge, where the absurdity of abstract ideas is fully considered.

Digitized by Google

idea of? *Alc.* This I grant. *Euph.* But can a colour or triangle, such as you describe their abstract general ideas, really exist? *Alc.* It is absolutely impossible such things should exist in nature. *Euph.* Should it not follow then, that they cannot exist in your mind, or in other words that you cannot conceive or frame an idea of them? *Alc.* You seem, Euphranor, not to distinguish between pure intellect and imagination. Abstract general ideas I take to be the object of pure intellect, which may conceive them, although they cannot perhaps be imagined. *Euph.* I do not perceive that I can by any faculty, whether of intellect or imagination, conceive or frame an idea of that which is impossible and includes a contradiction. And I am very much at a loss to account for your admitting that in common instances, which you would make an argument against Divine faith and mysteries.

VII. *Alc.* There must be some mistake in this. How is it possible there should be general knowledge without general propositions, or these without general names, which cannot be without general ideas by standing for which they become general? *Euph.* But may not words become general, by being made to stand indiscriminately for all particular ideas, which from a mutual resemblance belong to the same kind, without the intervention of any abstract general idea? *Alc.* Is there then no such thing as a general idea? *Euph.* May we not admit general ideas, though we should not admit them to be made by abstraction, or though we should not allow of general abstract ideas? To me it seems, a particular idea may become general by being used to stand for or represent other ideas; and that, general knowledge is conversant about signs or general ideas made such by their signification, and which are considered rather in their relative capacity, and as substituted for others, than in their own nature, or for their own sake. A black line, for instance, an inch long, though in itself

Digitized by Google

particular, may yet become universal, being used as a sign to stand for any line whatsoever. *Alc.* It is your opinion then, that words become general by representing an indefinite number of particular ideas? *Euph.* It seems so to me. *Alc.* Whenever therefore I hear a general name, it must be supposed to excite some one or other particular idea of that species in my mind. *Euph.* I cannot say so neither. Pray, Alciphron, doth it seem to you necessary, that as often as the word man occurs in reading or discourse, you must form in your mind the idea of a particular man? *Alc.* I own, it doth not: and not finding particular ideas always suggested by the words, I was led to think I had abstract general ideas suggested by them. And this is the opinion of all thinking men, who are agreed, the only use of words is to suggest ideas. And indeed what other use can we assign them?

VIII. Be the use of words or names what it will, I can never think it is to do things impossible. Let us then inquire what it is; and see if we can make sense of our daily practice. Words it is agreed are signs: it may not therefore be amiss to examine the use of other signs in order to know that of words. Counters, for instance, at a card-table are used, not for their own sake, but only as signs substituted for money as words are for ideas. Say now, Alciphron, is it necessary every time these counters are used throughout the whole progress of a game, to frame an idea of the distinct sum or value that each represents? *Alc.* By no means: it is sufficient the players first agree on their respective values, and at last substitute those values in their stead. *Euph.* And in casting up a sum, where the figures stand for pounds, shillings, and pence, do you think it necessary, throughout the whole progress of the operation, in each step to form ideas of pounds, shillings, and pence? *Alc.* I do not; it will suffice if in the conclusion those figures direct our actions with respect to things. *Euph.* From hence it seems to follow that words may

Digitized by Google

not be insignificant, although they should not, every time they are used, excite the ideas they signify in our minds, it being sufficient, that we have it in our power to substitute things or ideas for their signs when there is occasion. It seems also to follow, that there may be another use of words, besides that of marking and suggesting distinct ideas, to wit, the influencing our conduct and actions; which may be done either by forming rules for us to act by, or by raising certain passions, dispositions, and emotions, in our minds. A discourse, therefore, that directs how to act, or excites to the doing or forbearance of an action may, it seems, be useful and significant, although the words whereof it is composed should not bring each a distinct idea into our minds? *Alc.* It seems so. *Euph.* Pray tell me, Alciphron, is not an idea altogether inactive? *Alc.* It is. *Euph.* An agent therefore, an active mind, or spirit, cannot be an idea or like an idea. Whence it should seem to follow, that those words which denote an active principle, soul, or spirit, do not, in a strict and proper sense, stand for ideas: and yet they are not insignificant neither: since I understand what is signified by the term I, or myself, or know what it means, although it be no idea, nor like an idea, but that which thinks and wills and apprehends ideas, and operates about them. *Alc.* What would you infer from this? *Euph.* What hath been inferred already; that words may be significant, although they do not stand for ideas.* The contrary whereof having been presumed, seems to have produced the doctrine of abstract ideas. *Alc.* Will you not allow then that the mind can abstract? *Euph.* I do not deny it may abstract in a certain sense, inasmuch as those things that can really exist, or be really perceived asunder, may be conceived asunder, or abstracted one from the other; for instance, a man's head from his body, colour from

* See the Principles of Human Knowledge, sect. cxxxv. and the Introduction, sect. xx.

Digitized by Google

motion, figure from weight. But it will not thence follow, that the mind can frame abstract general ideas, which appear to be impossible. *Alc.* And yet it is a current opinion, that every substantive name marks out and exhibits to the mind one distinct idea separate from all others. *Euph.* Pray, Alciphron, is not the word *number* such a substantive name? *Alc.* It is. *Euph.* Do but try now whether you can frame an idea of number in abstract, exclusive of all signs, words, and things numbered. I profess for my own part I cannot. *Alc.* Can it be so hard a matter to form a simple idea of number, the object of a most evident demonstrable science? Hold, let me see, if I cannot abstract the idea of number, from the numeral names and characters, and all particular numerable things. Upon which Alciphron paused awhile, and then said, To confess the truth I do not find that I can. *Euph.* But though, it seems, neither you nor I can form distinct simple ideas of number, we can nevertheless make a very proper and significant use of numeral names. They direct us in the disposition and management of our affairs, and are of such necessary use, that we should not know how to do without them. And yet, if other men's faculties may be judged of by mine, to attain a precise simple abstract idea of number, is as difficult as to comprehend any mystery in religion.

IX. But to come to your own instance, let us examine what idea we can frame of force abstracted from body, motion, and outward sensible effects. For myself I do not find that I have or can have any such idea. *Alc.* Surely every one knows what is meant by force. *Euph.* And yet I question whether every one can form a distinct idea of force. Let me intreat you, Alciphron, be not amused by terms, lay aside the word *force*, and exclude every other thing from your thoughts, and then see what precise idea you have of force. *Alc.* Force is that in bodies which produceth motion and other sen-

Digitized by Google

sible effects? *Euph.* It is then something distinct from those effects? *Alc.* It is. *Euph.* Be pleased now to exclude the consideration of its subject and effects, and contemplate force itself in its own precise idea. *Alc.* I profess I find it no such easy matter. *Euph.* Take your own advice, and shut your eyes to assist your meditation. Upon this Alciphron having closed his eyes, and mused a few minutes, declared he could make nothing of it. And that, replied Euphranor, which it seems neither you nor I can frame an idea of, by your own remark of men's minds and faculties being made much alike, we may suppose others have no more an idea of than we? *Alc.* We may. *Euph.* But notwithstanding all this, it is certain there are many speculations, reasonings, and disputes, refined subtilties and nice distinctions, about this same force. And to explain its nature, and to distinguish the several notions or kinds of it, the terms *gravity, reaction, vis inertiæ, vis insita, vis impressa, vis mortua, vis viva, impetus, momentum, solicitatio, conatus,* and divers other such-like expressions, have been used by learned men: and no small controversies have arisen about the notions or definitions of these terms. It had puzzled men to know whether force is spiritual or corporeal, whether it remains after action, how it is transferred from one body to another. Strange paradoxes have been framed about its nature, properties, and proportions: for instance, that contrary forces may at once subsist in the same quiescent body: that the force of percussion in a small particle is infinite: for which and other curiosities of the same sort, you may consult Borellus de vi Percussionis, the Lezioni Academiche of Toricelli, the Exercitations of Hermanus, and other writers. It is well known to the learned world, what a controversy hath been carried on between mathematicians, particularly Monsieur Leibnitz, and Monsieur Papin in the Leipsic Acta Eruditorum about the proportion of forces, whe-

Digitized by Google

ther they be each to other in a proportion compounded of the simple proportions of the bodies and the celerities, or in one compounded of the simple proportion of the bodies and the duplicate proportion of the celerities? A point, it seems, not yet agreed: as indeed the reality of the thing itself is made a question. Leibnitz distinguisheth between the *nisus elementaris*, and the *impetus*, which is formed by a repetition of the *nisus elementaris*, and seems to think they do not exist in nature, but are made only by an abstraction of the mind. The same author, treating of original active force, to illustrate his subject, hath recourse to the substantial forms and Entelecheia of Aristotle. And the ingenious Toricelli saith of force and impetus, that they are subtile abstracts and spiritual quintessences; and concerning the *momentum* and the velocity of heavy bodies falling, he saith they are *un certo che*, and *un non so che*, that is, in plain English, he knows not what to make of them. Upon the whole therefore, may we not pronounce, that excluding body, time, space, motion, and all its sensible measures and effects, we shall find it as difficult to form an idea of force as of grace? *Alc.* I do not know what to think of it.

X. *Euph.* And yet, I presume, you allow there are very evident propositions or theorems relating to force, which contain useful truths: for instance, that a body with conjunct forces describes the diagonal of a parallelogram, in the same time that it would the sides with separate. Is not this a principle of very extensive use? Doth not the doctrine of the composition and resolution of forces depend upon it, and, in consequence thereof, numberless rules and theorems directing men how to act, and explaining phenomena throughout the mechanics and mathematical philosophy? And if, by considering this doctrine of force, men arrive at the knowledge of many inventions in mechanics, and are taught to frame engines, by means of which things difficult

Digitized by Google

and otherwise impossible may be performed, and if the same doctrine which is so beneficial here below, serveth also as a key to discover the nature of the celestial motions, shall we deny that it is of use, either in practice or speculation, because we have no distinct idea of force? Or that which we admit with regard to *force*, upon what pretence can we deny concerning *grace*? If there are queries, disputes, perplexities, diversity of notions and opinions, about the one, so there are about the other also: if we can form no precise distinct idea of the one, so neither can we of the other. Ought we not therefore by a parity of reason to conclude, there may be divers true and useful propositions concerning the one as well as the other? And that grace may be an object of our faith, and influence our life and actions, as a principle destructive of evil habits and productive of good ones, although we cannot attain a distinct idea of it, separate or abstracted from God the author, from man the subject, and from virtue and piety its effects?

XI. Shall we not admit the same method of arguing, the same rules of logic, reason, and good sense, to obtain in things spiritual, and things corporeal, in faith and science, and shall we not use the same candour, and make the same allowances, in examining the revelations of God and the inventions of men? For aught I see, that philosopher cannot be free from bias and prejudice, or be said to weigh things in an equal balance, who shall maintain the doctrine of force and reject that of grace, who shall admit the abstract idea of a triangle, and at the same time ridicule the holy Trinity. But however partial or prejudiced other minute philosophers might be, you have laid down for a maxim, that the same logic which obtains in other matters must be admitted in religion. *Lys.* I think, Alciphron, it would be more prudent to abide by the way of wit and humour, than thus to try religion by the dry test of reason and logic. *Alc.* Fear not: by all the rules of

Digitized by Google

right reason, it is absolutely impossible that any mystery, and least of all the Trinity, should really be the object of man's faith. *Euph.* I do not wonder you thought so, as long as you maintained that no man could assent to a proposition, without perceiving or framing in his mind distinct ideas marked by the terms of it. But although terms are signs, yet having granted that those signs may be significant, though they should not suggest ideas represented by them, provided they serve to regulate and influence our wills, passions, and conduct, you have consequently granted, that the mind of man may assent to propositions containing such terms, when it is so directed or affected by them, notwithstanding it should not perceive distinct ideas marked by those terms. Whence it seems to follow, that a man may believe the doctrine of the Trinity, if he finds it revealed in Holy Scripture, that the Father, the Son, and the Holy Ghost, are God, and that there is but one God? Although he doth not frame in his mind, any abstract or distinct ideas of trinity, substance, or personality, provided that this doctrine of a Creator, Redeemer, and Sanctifier, makes proper impressions on his mind, producing therein, love, hope, gratitude, and obedience, and thereby becomes a lively operative principle, influencing his life and actions agreeably to that notion of saving faith which is required in a Christian. This I say, whether right or wrong, seems to follow from your own principles and concessions. But for further satisfaction, it may not be amiss to inquire whether there be any thing parallel to this Christian faith in the minute philosophy. Suppose a fine gentleman, or lady of fashion, who are too much employed to think for themselves and are only free-thinkers at second-hand, have the advantage of being betimes initiated in the principles of your sect, by conversing with men of depth and genius, who have often declared it to be their opinion, the world is governed either by fate or by chance,

Digitized by Google

it matters not which; will you deny it possible for such persons to yield their assent to either of these propositions? *Alc.* I will not. *Euph.* And may not such an assent be properly called faith? *Alc.* It may. *Euph.* And yet it is possible, those disciples of the minute philosophy may not dive so deep, as to be able to frame any abstract, or precise, or any determinate, idea whatsoever, either of fate or of chance? *Alc.* This too I grant. *Euph.* So that, according to you, this same gentleman or lady may be said to believe or have faith where they have not ideas? *Alc.* They may. *Euph.* And may not this faith or persuasion produce real effects, and shew itself in the conduct and tenor of their lives, freeing them from the fears of superstition, and giving them a true relish of the world, with a noble indolence or indifference about what comes after? *Alc.* It may. *Euph.* And may not Christians, with equal reason, be allowed to believe the Divinity of our Saviour, or that in him God and man make one person, and be verily persuaded thereof, so far as for such faith or belief to become a real principle of life and conduct, inasmuch as by virtue of such persuasion they submit to his government, believe his doctrine, and practise his precepts, although they frame no abstract idea of the union between the Divine and human nature; nor may be able to clear up the notion of person to the contentment of a minute philosopher. To me it seems evident, that if none but those who had nicely examined, and could themselves explain, the principle of individuation in man, or untie the knots and answer the objections, which may be raised even about human personal identity, would require of us to explain the Divine mysteries, we should not be often called upon for a clear and distinct idea of *person* in relation to the Trinity, nor would the difficulties on that head be often objected to our faith. *Alc.* Methinks, there is no such mystery in personal identity. *Euph.* Pray, in what do you

Digitized by Google

take it to consist? *Alc.* In consciousness. *Euph.* Whatever is possible may be supposed? *Alc.* It may. *Euph.* We will suppose now (which is possible in the nature of things, and reported to be fact) that a person, through some violent accident or distemper, should fall into such a total oblivion, as to lose all consciousness of his past life, and former ideas. I ask, is he not still the same person? *Alc.* He is the same man, but not the same person. Indeed you ought not to suppose that a person loseth its former consciousness; for this is impossible, though a man perhaps may; but then he becomes another person. In the same person, it must be owned, some old ideas may be lost, and some new ones got; but a total change is inconsistent with identity of person. *Euph.* Let us then suppose that a person hath ideas, and is conscious during a certain space of time, which we will divide into three equal parts, whereof the latter terms are marked by the letters A, B, C. In the first part of time, the person gets a certain number of ideas, which are retained in A: during the second part of time, he retains one half of his old ideas, and loseth the other half, in place of which he acquires as many new ones: so that in B his ideas are half old and half new. And in the third part, we will suppose him to lose the remainder of the ideas acquired in the first, and to get new ones in their stead, which are retained in C, together with those acquired in the second part of time. Is this a possible fair supposition? *Alc.* It is. *Euph.* Upon these premises I am tempted to think, one may demonstrate, that personal identity doth not consist in consciousness. *Alc.* As how? *Euph.* You shall judge; but thus it seems to me. The persons in A and B are the same, being conscious of common ideas by supposition. The person in B is (for the same reason) one and the same with the person in C. Therefore the person in A is the same with the person in C, by that undoubted axiom, *Quæ conveniunt uni tertio conveniunt in-*

Digitized by Google

ter se. But the person in C hath no idea in common with the person in A. Therefore personal identity doth not consist in consciousness. What do you think, Alciphron, is not this a plain inference? *Alc.* I tell you what I think: you will never assist my faith, by puzzling my knowledge.

XII. There is, if I mistake not, a practical faith, or assent, which sheweth itself in the will and actions of a man, although his understanding may not be furnished with those abstract, precise, distinct ideas, which, whatever a philosopher may pretend, are acknowledged to be above the talents of common men; among whom, nevertheless, may be found, even according to your own concession, many instances of such practical faith, in other matters which do not concern religion. What should hinder therefore, but that doctrines relating to heavenly mysteries, might be taught in this saving sense to vulgar minds, which you may well think incapable of all teaching and faith in the sense you suppose? Which mistaken sense, said Crito, has given occasion to much profane and misapplied raillery. But all this may very justly be retorted on the minute philosophers themselves, who confound scholasticism with Christianity, and impute to other men those perplexities, chimeras, and inconsistent ideas, which are often the workmanship of their own brains, and proceed from their own wrong way of thinking. Who doth not see that such an ideal abstracted faith is never thought of by the bulk of Christians, husbandmen, for instance, artisans, or servants? Or what footsteps are there in the Holy Scripture to make us think, that the wiredrawing of abstract ideas was a task enjoined either Jews or Christians? Is there any thing in the law or the prophets, the evangelists or apostles, that looks like it? Every one whose understanding is not perverted by science falsely so called, may see, the saving faith of Christians is quite of another kind, a vital operative principle, productive of charity

Digitized by Google

and obedience. *Alc.* What are we to think then of the disputes and decisions of the famous council of Nice, and so many subsequent councils? What was the intention of those venerable fathers the homoousians and the homoiousians? Why did they disturb themselves and the world with hard words, and subtile controversies? *Cri.* Whatever their intention was, it could not be to beget nice abstracted ideas of mysteries in the minds of common Christians, this being evidently impossible: nor doth it appear that the bulk of Christian men did in those days think it any part of their duty, to lay aside the words, shut their eyes, and frame those abstract ideas; any more than men now do of force, time, number, or several other things, about which they nevertheless believe, know, argue, and dispute. To me it seems, that, whatever was the source of these controversies, and howsoever they were managed, wherein human infirmity must be supposed to have had its share, the main end was not, on either side, to convey precise positive ideas to the minds of men, by the use of those contested terms, but rather a negative sense, tending to exclude polytheism on the one hand, and Sabellianism on the other.* *Alc.* But what shall we say of so many learned and ingenious divines, who from time to time have obliged the world with new explications of mysteries, who, having themselves professedly laboured to acquire accurate ideas, would recommend their discoveries and speculations to others for articles of faith? *Cri.* To all such innovators in religion I would say with Jerome, "Why after so many centuries do you pretend to teach us what was untaught before? Why explain what neither Peter nor Paul thought necessary to be explained?"† And it must be owned, that the explication of mysteries in divinity, allowing the attempt

* Sozomen. lib. ii. cap. viii.

† Hieronym. ad Pammachium et Oceanum de Erroribus Origenis.

Digitized by Google

as fruitless as the pursuit of the philosopher's stone in chemistry, or the perpetual motion in mechanics, is no more than they chargeable on the profession itself, but only on the wrongheaded professors of it.

XIII. It seems, that what hath been now said may be applied to other mysteries of our religion. Original sin, for instance, a man may find it impossible to form an idea of in abstract, or of the manner of its transmission, and yet the belief thereof may produce in his mind a salutary sense of his own unworthiness, and the goodness of his Redeemer: from whence may follow good habits, and from them good actions, the genuine effects of faith, which, considered in its true light, is a thing neither repugnant nor incomprehensible, as some men would persuade us, but suited even to vulgar capacities, placed in the will and affections rather than in the understanding, and producing holy lives, rather than subtile theories. Faith, I say, is not an indolent perception but an operative persuasion of mind, which ever worketh some suitable action, disposition, or emotion, in those who have it; as it were easy to prove and illustrate by innumerable instances, taken from human affairs. And, indeed, while the Christian religion is considered as an institution fitted to ordinary minds, rather than to the nicer talents, whether improved or puzzled, of speculative men; and our notions about faith are accordingly taken from the commerce of the world, and practice of mankind, rather than from the peculiar systems of refiners; it will, I think, be no difficult matter to conceive and justify the meaning and use of our belief of mysteries, against the most confident assertions and objections of the minute philosophers, who are easily to be caught in those very snares which they have spun and spread for others. And that humour of controversy, the mother and nurse of heresies, would doubtless very much abate, if it was considered that things are to be rated, not by the colour, shape, or stamp, so truly as by

Digitized by Google

the weight. If the moment of opinions had been by some litigious divines made the measure of their zeal, it might have spared much trouble both to themselves and others. Certainly one that takes his notions of faith, opinion, and assent, from common sense, and common use, and has maturely weighed the nature of signs and language, will not be so apt to controvert the wording of a mystery, or to break the peace of the church, for the sake of retaining or rejecting a term.

XIV. *Alc.* It seems, Euphranor, and you would persuade me into an opinion, that there is nothing so singularly absurd as we are apt to think, in the belief of mysteries; and that a man need not renounce his reason to maintain his religion. But if this were true, how comes it to pass, that, in proportion as men abound in knowledge, they dwindle in faith? *Euph.* O Alciphron! I have learned from you, that there is nothing like going to the bottom of things, and analysing them into their first principles. I shall therefore make an essay of this method, for clearing up the nature of faith: with what success, I shall leave you to determine; for I dare not pronounce myself, on my own judgment, whether it be right or wrong: but thus it seems to me. The objections made to faith are by no means an effect of knowledge, but proceed rather from an ignorance of what knowledge is; which ignorance may possibly be found even in those who pass for masters of this or that particular branch of knowledge. Science and faith agree in this, that they both imply an assent of the mind; and, as the nature of the first is most clear and evident, it should be first considered in order to cast a light on the other. To trace things from their original, it seems that the human mind, naturally furnished with the ideas of things particular and concrete, and being designed, not for the bare intuition of ideas, but for action or operation about them, and pursuing her own happiness therein, stands in need of certain general rules

Digitized by Google

or theorems to direct her operations in this pursuit; the supplying which want is the true, original, reasonable end of studying the arts and sciences. Now these rules being general, it follows, that they are not to be obtained by the mere consideration of the original ideas, or particular things, but by the means of marks or signs, which, being so far forth universal, become the immediate instruments and materials of science. It is not therefore by mere contemplation of particular things, and much less of their abstract general ideas, that the mind makes her progress, but by an apposite choice and skilful management of signs: for instance, force and number, taken in concrete, with their adjuncts, subjects, and signs, are what every one knows; and considered in abstract, so as making precise ideas of themselves, they are what nobody can comprehend. That their abstract nature, therefore, is not the foundation of science, is plain: and that barely considering their ideas in concrete, is not the method to advance in the respective sciences, is what every one that reflects may see; nothing being more evident, than that one who can neither write nor read, in common use understands the meaning of numeral words, as well as the best philosopher or mathematician.

XV. But here lies the difference: the one, who understands the notation of numbers, by means thereof is able to express briefly and distinctly all the variety and degrees of number, and to perform with ease and dispatch several arithmetical operations, by the help of general rules. Of all which operations as the use in human life is very evident, so it is no less evident, that the performing them depends on the aptness of the notation. If we suppose rude mankind without the use of language, it may be presumed, they would be ignorant of arithmetic: but the use of names, by the repetition whereof in a certain order they might express endless degrees of number, would be the first step towards that

Digitized by Google

science. The next step would be, to devise proper marks of a permanent nature, and visible to the eye, the kind and order whereof must be chosen with judgment, and accommodated to the names. Which marking, or notation, would, in proportion as it was apt and regular, facilitate the invention and application of general rules, to assist the mind in reasoning and judging, in extending, recording, and communicating, its knowledge about numbers: in which theory and operations, the mind is immediately occupied about the signs or notes, by mediation of which it is directed to act about things, or number in concrete (as the logicians call it), without ever considering the simple, abstract, intellectual, general idea of number. I imagine one need not think much to be convinced, that the science of arithmetic, in its rise, operations, rules, and theorems, is altogether conversant about the artificial use of signs, names, and characters. These names and characters are universal, inasmuch as they are signs. The names are referred to things, and the characters to names, and both to operation. The names being few, and proceeding by a certain analogy, the characters will be more useful, the simpler they are, and the more aptly they express this analogy. Hence the old notation by letters was more useful than words written at length: and the modern notation by figures, expressing the progression or analogy of the names by their simple places, is much preferable to that for ease and expedition, as the invention of algebraical symbols is to this for extensive and general use. As arithmetic and algebra are sciences of great clearness, certainty, and extent, which are immediately conversant about signs, upon the skilful use and management whereof they entirely depend; so a little attention to them may possibly help us to judge of the progress of the mind in other sciences, which, though differing in nature, design, and object, may yet agree in the general methods of proof and inquiry.

Digitized by Google

XVI. If I mistake not, all sciences, so far as they are universal and demonstrable by human reason, will be found conversant about signs as their immediate object, though these in the application are referred to things: the reason whereof is not difficult to comprehend. For as the mind is better acquainted with some sort of objects, which are earlier suggested to it, strike it more sensibly, or are more easily comprehended than others, it is naturally led to substitute those objects for such as are more subtile, fleeting, or difficult to conceive. Nothing, I say, is more natural, than to make the things we know a step towards those we do not know; and to explain and represent things less familiar by others which are more so. Now, it is certain we imagine before we reflect, and we perceive by sense before we imagine, and of all our senses the sight is the most clear, distinct, various, agreeable, and comprehensive. Hence it is natural to assist the intellect by the imagination, the imagination by sense, and the other senses by sight. Hence figures, metaphors, and types. We illustrate spiritual things by corporeal; we substitute sounds for thoughts, and written letters for sounds; emblems, symbols, and hieroglyphics, for things too obscure to strike, and too various or too fleeting to be retained. We substitute things imaginable for things intelligible, sensible things for imaginable, smaller things for those that are too great to be comprehended easily, and greater things for such as are too small to be discerned distinctly; present things for absent, permanent for perishing, and visible for invisible. Hence the use of models and diagrams. Hence right lines are substituted for time, velocity, and other things of very different natures. Hence we speak of spirits in a figurative style, expressing the operations of the mind by allusions and terms, borrowed from sensible things, such as *apprehend*, *conceive*, *reflect*, *discourse*, and such-like: and hence those allegories which illustrate things intellectual by visions exhibited

Digitized by Google

to the fancy. Plato, for instance, represents the mind presiding in her vehicle by the driver of a winged chariot, which sometimes moults and droops: this chariot is drawn by two horses, the one good and of a good race, the other of a contrary kind, symbolically expressing the tendency of the mind towards the Divinity, as she soars or is borne aloft by two instincts like wings, the one in the intellect towards truth, the other in the will towards excellence, which instincts moult or are weakened by sensual inclinations, expressing also her alternate elevations and depressions, the struggles between reason and appetite, like horses that go an unequal pace, or draw different ways, embarrassing the soul in her progress to perfection. I am inclined to think the doctrine of signs a point of great importance, and general extent, which, if duly considered, would cast no small light upon things, and afford a just and genuine solution of many difficulties.

XVII. Thus much, upon the whole, may be said of all signs: that they do not always suggest ideas signified to the mind, that when they suggest ideas, they are not general abstract ideas: that they have other uses besides barely standing for and exhibiting ideas, such as raising proper emotions, producing certain dispositions or habits of mind, and directing our actions in pursuit of that happiness, which is the ultimate end and design, the primary spring and motive, that sets rational agents at work: that the true end of speech, reason, science, faith, assent, in all its different degrees, is not merely, or principally, or always, the imparting or acquiring of ideas, but rather something of an active operative nature, tending to a conceived good, which may sometimes be obtained, not only although the ideas marked are not offered to the mind, but even although there should be no possibility of offering or exhibiting any such idea to the mind: for instance, the algebraic mark, which denotes the root of a negative square, hath its use in logistic operations, although it be impossible to form an idea of any

Digitized by Google

such quantity. And what is true of algebraic signs, is also true of words or language, modern algebra being in fact a more short, apposite, and artificial sort of language, and it being possible to express by words at length, though less conveniently, all the steps of an algebraical process. And it must be confessed, that even the mathematical sciences themselves, which above all others are reckoned the most clear and certain, if they are considered, not as instruments to direct our practice, but as speculations to employ our curiosity, will be found to fall short in many instances of those clear and distinct ideas, which, it seems, the minute philosophers of this age, whether knowingly or ignorantly, expect and insist upon in the mysteries of religion.

XVIII. Be the science or subject what it will, whensoever men quit particulars for generalities, things concrete for abstractions, when they forsake practical views, and the useful purposes of knowledge for barren speculation, considering means and instruments as ultimate ends, and labouring to attain precise ideas which they suppose indiscriminately annexed to all terms, they will be sure to embarrass themselves with difficulties and disputes. Such are those which have sprung up in geometry about the nature of the angle of contact, the doctrine of proportions, of indivisibles, infinitesimals, and divers other points; notwithstanding all which, that science is very rightly esteemed an excellent and useful one, and is really found to be so in many occasions of human life, wherein it governs and directs the actions of men, so that by the aid or influence thereof those operations become just and accurate, which would otherwise be faulty and uncertain. And from a parity of reason, we should not conclude any other doctrines which govern, influence, or direct, the mind of man to be, any more than that, the less true or excellent, because they afford matter of controversy and useless speculation to curious and licentious wits: particularly those articles of our

Digitized by Google

Christian faith, which, in proportion as they are believed, persuade, and, as they persuade, influence the lives and actions of men. As to the perplexity of contradictions and abstracted notions, in all parts, whether of human science or Divine faith, cavillers may equally object, and unwary persons incur, while the judicious avoid it. There is no need to depart from the received rules of reasoning to justify the belief of Christians. And if any pious men think otherwise, it may be supposed an effect, not of religion, or of reason, but only of human weakness. If this age be singularly productive of infidels, I shall not therefore conclude it to be more knowing, but only more presuming, than former ages: and their conceit, I doubt, is not the effect of consideration. To me it seems, that the more thoroughly and extensively any man shall consider and scan the principles, objects, and methods, of proceeding in arts and sciences, the more he will be convinced, there is no weight in those plausible objections that are made against the mysteries of faith, which it will be no difficult matter for him to maintain or justify in the received method of arguing, on the common principles of logic, and by numberless avowed parallel cases, throughout the several branches of human knowledge, in all which the supposition of abstract ideas creates the same difficulties.

XIX. *Alc.* I will allow, Euphranor, this reasoning of yours to have all the force you meant it should have. I freely own there may be mysteries: that we may believe where we do not understand: and that faith may be of use, although its object is not distinctly apprehended. In a word, I grant there may be faith and mysteries in other things, but not in religion: and that for this plain reason, because it is absurd to suppose, there should be any such thing as religion; and if there be no religion, it follows there cannot be religious faith or mysteries. Religion, it is evident, implies the worship of a God; which worship supposeth rewards and punishments, which sup-

Digitized by Google

pose merits and demerits, actions good and evil, and these suppose human liberty, a thing impossible: and consequently religion a thing built thereon must be an unreasonable absurd thing. There can be no rational hopes or fear where there is no guilt, nor any guilt where there is nothing done, but what unavoidably follows from the structure of the world and the laws of motion. Corporeal objects strike on the organs of sense, whence ensues a vibration in the nerves, which, being communicated to the soul or animal spirit in the brain or root of the nerves, produceth therein that motion called volition: and this produceth a new determination in the spirits, causing them to flow into such nerves as must necessarily by the laws of mechanism produce such certain actions. This being the case, it follows that those things which vulgarly pass for human actions are to be esteemed mechanical, and that they are falsely ascribed to a free principle. There is therefore no foundation for praise or blame, fear or hope, reward or punishment, nor consequently for religion, which, as I observed before, is built upon and supposeth those things. *Euph.* You imagine, Alciphron, if I rightly understand you, that man is a sort of organ played on by outward objects, which according to the different shape and texture of the nerves produce different motions and effects therein. *Alc.* Man may, indeed, be fitly compared to an organ; but a puppet is the very thing. You must know, that certain particles issuing forth in right lines from all sensible objects compose so many rays, or filaments, which drive, draw, and actuate, every part of the soul and body of man, just as threads or wires do the joints of that little wooden machine vulgarly called a *puppet:* with this only difference, that the latter are gross, and visible to common eyes, whereas the former are too fine and subtile to be discerned by any but a sagacious free-thinker. This admirably accounts for all those operations, which we have been taught to ascribe to a thinking principle

Digitized by Google

within us. *Euph.* This is an ingenious thought, and must be of great use in freeing men from all anxiety about moral notions, as it transfers the principle of action from the human soul to things outward and foreign. But I have my scruples about it. For you suppose the mind in a literal sense to be moved, and its volitions to be mere motions. Now if another should affirm, as it is not impossible some other may, that the soul is incorporeal, and that motion is one thing and volition another, I would fain know how you could make your point clear to such a one. It must be owned very clear to those who admit the soul to be corporeal, and all her acts to be but so many motions. Upon this supposition, indeed, the light wherein you place human nature is no less true, than it is fine and new. But let any one deny this supposition, which is easily done, and the whole superstructure falls to the ground. If we grant the abovementioned points, I will not deny a fatal necessity must ensue. But I see no reason for granting them. On the contrary it seems plain, that motion and thought are two things as really and as manifestly distinct as a triangle and a sound. It seems therefore, that in order to prove the necessity of human actions, you suppose what wants proof as much as the very point to be proved.

XX. *Alc.* But supposing the mind incorporeal, I shall, nevertheless, be able to prove my point. Not to amuse you with far-fetched arguments, I shall only desire you to look into your own breast and observe how things pass there, when an object offers itself to the mind. First, the understanding considers it: in the next place the judgment decrees about it, as a thing to be chosen or rejected, to be omitted or done, in this or that manner: and this decree of the judgment doth necessarily determine the will, whose office is merely to execute what is ordained by another faculty: consequently there is no such thing as freedom of the will: for that which is necessary cannot be free. In freedom

Digitized by Google

there should be an indifference to either side of the question, a power to act or not to act, without prescription or control: and without this indifference and this power, it is evident the will cannot be free. But it is no less evident, that the will is not indifferent in its actions, being absolutely determined and governed by the judgment. Now whatever moves the judgment, whether the greatest present uneasiness, or the greatest apparent good, or whatever else it be, it is all one to the point in hand. The will, being ever concluded and controlled by the judgment, is in all cases alike under necessity. There is, indeed, throughout the whole of human nature, nothing like a principle of freedom, every faculty being determined in all its acts by something foreign to it. The understanding, for instance, cannot alter its idea, but must necessarily see it such as it presents itself. The appetites by a natural necessity are carried towards their respective objects. Reason cannot infer indifferently any thing from any thing, but is limited by the nature and connexion of things, and the eternal rules of reasoning. And as this is confessedly the case of all other faculties, so it equally holds with respect to the will itself, as hath been already shewn. And if we may credit the Divine characterizer of our times, this above all others must be allowed the most slavish faculty. "Appetite (saith that noble writer), which is elder brother to Reason, being the lad of stronger growth, is sure on every contest to take the advantage of drawing all to his own side: and will, so highly boasted, is but at best a foot-ball or top between these youngsters, who prove very unfortunately matched, till the youngest, instead of now and then a kick or lash bestowed to little purpose, forsakes the ball or top itself, and begins to lay about his elder brother." *Cri.* This beautiful parable for style and manner might equal those of a known English writer, in low life renowned for allegory, were it not a little incorrect, making the weaker

Digitized by Google

lad find his account in laying about the stronger. *Alc.* This is helped by supposing the stronger lad the greater coward: but, be that as it will, so far as it relates to the point in hand, this is a clear state of the case. The same point may be also proved from the prescience of God. That which is certainly foreknown will certainly be. And what is certain is necessary. And necessary actions cannot be the effect of free-will. Thus you have this fundamental point of our free-thinking philosophy demonstrated different ways. *Euph.* Tell me, Alciphron, do you think it implies a contradiction, that God should make a man free? *Alc.* I do not. *Euph.* It is then possible there may be such a thing? *Alc.* This I do not deny. *Euph.* You can therefore conceive and suppose such a free agent? *Alc.* Admitting that I can; what then? *Euph.* Would not such a one think that he acted? *Alc.* He would. *Euph.* And condemn himself for some actions, and approve himself for others? *Alc.* This too I grant. *Euph.* Would he not think he deserved reward or punishment? *Alc.* He would. *Euph.* And are not all these characters actually found in man? *Alc.* They are. *Euph.* Tell me now, what other character of your supposed free agent may not actually be found in man? for if there is none such, we must conclude that man hath all the marks of a free agent. *Alc.* Let me see! I was certainly overseen in granting it possible, even for almighty power, to make such a thing as a free human agent. I wonder how I came to make such an absurd concession, after what had been, as I observed before, demonstrated so many different ways. *Euph.* O Alciphron! it is vulgarly observed that men judge of others by themselves. But in judging of me by this rule, you may be mistaken. Many things are plain to one of your sagacity, which are not so to me, who am often bewildered rather than enlightened by those very proofs, that with you pass for clear and evident. And, indeed, be the inference never so just, yet

Digitized by Google

so long as the premises are not clear, I cannot be thoroughly convinced. You must give me leave therefore to propose some questions, the solution of which may perhaps shew what at present I am not able to discern. *Alc.* I shall leave what hath been said with you, to consider and ruminate upon. It is now time to set out on our journey: there is, therefore, no room for a long string of question and answer.

XXI. *Euph.* I shall then only beg leave in a summary manner, to make a remark or two on what you have advanced. In the first place I observe, you take that for granted which I cannot grant, when you assert whatever is certain the same to be necessary. To me, certain and necessary seem very different; there being nothing in the former notion that implies constraint, nor consequently which may not consist with a man's being accountable for his actions. If it is foreseen that such an action shall be done, may it not also be foreseen that it shall be an effect of human choice and liberty? In the next place I observe, that you very nicely abstract and distinguish the actions of the mind, judgment, and will: that you make use of such terms as power, faculty, act, determination, indifference, freedom, necessity, and the like, as if they stood for distinct abstract ideas: and that this supposition seems to ensnare the mind into the same perplexities and errors, which, in all other instances, are observed to attend the doctrine of abstraction. It is self-evident, that there is such a thing as motion: and yet there have been found philosophers, who, by refined reasoning, would undertake to prove that there was no such thing. Walking before them was thought the proper way to confute those ingenious men. It is no less evident, that man is a free agent: and though by abstracted reasonings you should puzzle me, and seem to prove the contrary, yet so long as I am conscious of my own actions, this inward evidence of plain fact will bear me up against all

Digitized by Google

your reasonings, however subtile and refined. The confuting plain points by obscure ones, may perhaps convince me of the ability of your philosophers, but never of their tenets. I cannot conceive why the acute Cratylus should suppose a power of acting in the appetite and reason, and none at all in the will. Allowing, I say, the distinction of three such beings in the mind, I do not see how this could be true. But if I cannot abstract and distinguish so many beings in the soul of man so accurately as you do, I do not find it necessary, since it is evident to me in the gross and concrete that I am a free agent. Nor will it avail to say, the will is governed by the judgment, or determined by the object, while, in every sudden common case, I cannot discern nor abstract the decree of the judgment from the command of the will; while I know the sensible object to be absolutely inert: and lastly, while I am conscious that I am an active being, who can and do determine myself. If I should suppose things spiritual to be corporeal, or refined things actual and real into general abstracted notions, or by metaphysical skill split things simple and individual into manifold parts, I do not know what may follow: but if I take things as they are, and ask any plain untutored man, whether he acts or is free in this or that particular action, he readily assents, and I as readily believe him from what I find within. And thus, by an induction of particulars, I may conclude man to be a free agent, although I may be puzzled to define or conceive a notion of freedom in general and abstract. And if man be free he is plainly accountable. But if you shall define, abstract, suppose, and it shall follow that according to your definitions, abstractions, and suppositions, there can be no freedom in man, and you shall thence infer that he is not accountable, I shall make bold to depart from your metaphysical abstracted sense, and appeal to the common sense of mankind.

Digitized by Google

XXII. If we consider the notions that obtain in the world of guilt and merit, praise and blame, accountable and unaccountable, we shall find the common question in order to applaud or censure, acquit or condemn, a man, is, whether he did such an action? and whether he was himself when he did it? which comes to the same thing. It should seem therefore that, in the ordinary commerce of mankind, any person is esteemed accountable simply as he is an agent. And though you should tell me that man is inactive, and that the sensible objects act upon him, yet my own experience assures me of the contrary. I know I act, and what I act I am accountable for. And if this be true, the foundation of religion and morality remains unshaken. Religion, I say, is concerned no further than that man should be accountable: and this he is according to my sense, and the common sense of the world, if he acts; and that he doth act is self-evident. The grounds, therefore, and ends of religion, are secured; whether your philosophic notion of liberty agrees with man's actions or no, and whether his actions are certain or contingent, the question being not whether he did it with a free will, or what determined his will? not, whether it was certain or foreknown that he would do it? but only whether he did it wilfully, as what must entitle him to the guilt or merit of it. *Alc.* But still, the question recurs, whether man be free? *Euph.* To determine this question, ought we not first to determine what is meant by the word *free?* *Alc.* We ought. *Euph.* In my opinion, a man is said to be free, so far forth as he can do what he will. Is this so or is it not? *Alc.* It seems so. *Euph.* Man therefore acting according to his will, is to be accounted free. *Alc.* This I admit to be true in the vulgar sense. But a philosopher goes higher, and inquires whether man be free to will? *Euph.* That is, whether he can will as he wills? I know not how philosophical it may be to ask this question,

Digitized by Google

but it seems very unintelligible. The notions of guilt and merit, justice and reward, are in the minds of men antecedent to all metaphysical disquisitions: and according to those received natural notions, it is not doubted that man is accountable, that he acts, and is self-determined.

XXIII. But a minute philosopher shall, in virtue of wrong suppositions, confound things most evidently distinct; body, for instance, with spirit, motion with volition, certainty with necessity; and an abstracter or refiner shall so analyse the most simple instantaneous act of the mind, as to distinguish therein divers faculties and tendencies, principles and operations, causes and effects; and having abstracted, supposed, and reasoned upon principles, gratuitous and obscure, such a one he will conclude it is no act at all, and man no agent but a puppet, or an organ played on by outward objects, and his will a top or a foot-ball. And this passeth for philosophy and free-thinking. Perhaps this may be what it passeth for, but it by no means seems a natural or just way of thinking. To me it seems, that if we begin from things particular and concrete, and thence proceed to general notions and conclusions, there will be no difficulty in this matter. But if we begin with generalities, and lay our foundation in abstract ideas, we shall find ourselves entangled and lost in a labyrinth of our own making. I need not observe, what every one must see, the ridicule of proving man no agent, and yet pleading for free thought and action, of setting up at once for advocates of liberty and necessity. I have hastily thrown together these hints or remarks, on what you call a fundamental article of the minute philosophy, and your method of proving it, which seems to furnish an admirable specimen of the sophistry of abstract ideas. If in this summary way I have been more dogmatical than became me, you must excuse what you occasioned, by declining a joint and leisurely examination of the truth.

Digitized by Google

Alc. I think we have examined matters sufficiently. *Cri.* To all you have said against human liberty, it is a sufficient answer to observe that your arguments proceed upon an erroneous supposition, either of the soul's being corporeal, or of abstract ideas. And on the other hand, there is not need of much inquiry to be convinced of two points, than which none are more evident, more obvious, and more universally admitted by men of all sorts, learned or unlearned, in all times and places, to wit, that man acts and is accountable for his actions. Whatever abstracters, refiners, or men prejudiced to a false hypothesis, may pretend, it is, if I mistake not, evident to every thinking man of common sense, that human minds are so far from being engines or foot-balls, acted upon and bandied about by corporeal objects, without any inward principle of freedom or action, that the only original true notions that we have of freedom, agent, or action, are obtained by reflecting on ourselves, and the operations of our own minds. The singularity and credulity of minute philosophers, who suffer themselves to be abused by the paralogisms of three or four eminent patriarchs of infidelity in the last age, is, I think, not to be matched; there being no instance of bigoted superstition, the ringleaders whereof have been able to seduce their followers more openly and more widely from the plain dictates of nature and common sense.

XXIV. *Alc.* It has been always an objection against the discoveries of truth, that they depart from received opinions. The character of singularity is a tax on free-thinking: and as such we most willingly bear it, and glory in it. A genuine philosopher is never modest in a false sense, to the preferring authority before reason, or an old and common opinion before a true one. Which false modesty, as it discourages men from treading in untrodden paths, or striking out new light, is above all other qualities the greatest enemy to free-thinking. *Cri.* Authority in disputable points will have

Digitized by Google

its weight with a judicious mind, which yet will follow evidence wherever it leads. Without preferring we may allow it a good second to reason. Your gentlemen therefore, of the minute philosophy, may spare a world of common place upon reason, and light, and discoveries. We are not attached to authority against reason, nor afraid of untrodden paths that lead to truth, and are ready to follow a new light when we are sure it is no *ignis fatuus*. Reason may oblige a man to believe against his inclinations; but why should a man quit salutary notions for others not less unreasonable than pernicious? Your schemes, and principles, and boasted demonstrations, have been at large proposed and examined. You have shifted your notions, successively retreated from one scheme to another, and in the end renounced them all. Your objections have been treated in the same manner, and with the same event. If we except all that relates to the particular errors and faults of private persons, and difficulties which from the nature of things we are not obliged to explain, it is surprising to see, after such magnificent threats, how little remains that can amount to a pertinent objection against the Christian religion. What you have produced has been tried by the fair test of reason; and though you should hope to prevail by ridicule when you cannot by reason, yet, in the upshot, I apprehend you will find it impracticable to destroy all sense of religion. Make your countrymen ever so vicious, ignorant, and profane, men will still be disposed to look up to a supreme Being. Religion, right or wrong, will subsist in somet shape or other, and some worship there will surely be either of God or the creature. As for your ridicule, can any thing be more ridiculous, than to see the most unmeaning men of the age set up for free-thinkers, men so strong in assertion, and yet so weak in argument, advocates for freedom introducing a fatality, patriots trampling on the laws of their country, and pretenders to vir-

Digitized by Google

tue destroying the motives of it? Let any impartial man but cast an eye on the opinions of the minute philosophers. and then say if any thing can be more ridiculous, than to believe such things, and at the same time laugh at credulity.

XXV. *Lys.* Say what you will, we have the laughers on our side: and as for your reasoning I take it to be another name for sophistry. *Cri.* And I suppose by the same rule you take your own sophisms for arguments? To speak plainly, I know no sort of sophism that is not employed by minute philosophers against religion. They are guilty of a *petitio principii*, in taking for granted that we believe contradictions; of *non causa pro causa*, in affirming that uncharitable feuds and discords are the effects of Christianity; of *ignoratio elenchi*, in expecting demonstration where we pretend only to faith. If I were not afraid to offend the delicacy of polite ears, nothing were easier than to assign instances of every kind of sophism, which would shew how skilful your own philosophers are in the practice of that sophistry you impute to others. *Euph.* For my own part, if sophistry be the art or faculty of deceiving other men, I must acquit these gentlemen of it. They seem to have led me a progress through atheism, libertinism, enthusiasm, fatalism, not to convince me of the truth of any of them, so much as to confirm me in my own way of thinking. They have exposed their fairy ware not to cheat but divert us. As I know them to be professed masters of ridicule, so in a serious sense I know not what to make of them. *Alc.* You do not know what to make of us! I should be sorry you did. He must be a superficial philosopher that is soon fathomed.

XXVI. *Cri.* The ambiguous character is, it seems, the sure way to fame and esteem in the learned world, as it stands constituted at present. When the ingenious reader is at a loss to determine whether his author be atheist or Deist or polytheist, stoic or Epicurean, sceptic

Digitized by Google

or dogmatist, infidel or enthusiast, in jest or in earnest, he concludes him without hesitation to be enigmatical and profound. In fact, it is true of the most admired writers of the age, that no man alive can tell what to make of them, or what they would be at. *Ale.* We have among us moles that dig deep under ground, and eagles that soar out of sight. We can act all parts and become all opinions, putting them on or off with great freedom of wit and humour. *Euph.* It seems then you are a pair of inscrutable, unfathomable, fashionable philosophers? *Lys.* It cannot be denied. *Euph.* But, I remember, you set out with an open dogmatical air, and talked of plain principles, and evident reasoning, promised to make things as clear as noonday, to extirpate wrong notions and plant right in their stead. Soon after, you began to recede from your first notions, and adopt others: you advancedone while and retreated another, yielded and retracted, said and unsaid: and after having followed you through so many untrodden paths and intricate mazes I find myself never the nearer. *Ale.* Did we not tell you the gentlemen of our sect are great proficients in raillery? *Euph.* But, methinks, it is a vain attempt, for a plain man of any settled belief or principles to engage with such slippery, fugitive, changeable philosophers. It seems as if a man should stand still in the same place, while his adversary chooses and changes his situation, has full range and liberty to traverse the field, and attack him on all sides and in all shapes, from a nearer or further distance, on horseback or on foot, in light or heavy armour, in close fight or with missive weapons. *Ale.* It must be owned, a gentleman hath great advantage over a strait-laced pedant or bigot. *Euph.* But after all, what am I the better for the conversation of two such knowing gentlemen; I hoped to have unlearned my errors, and to have learned truths from you, but to my great disappointment, I do not find that I am either

Digitized by Google

untaught or taught. *Alc.* To unteach men their prejudices is a difficult task: and this must first be done, before we can pretend to teach them the truth. Besides, we have at present no time to prove and argue. But suppose my mind white paper, and without being at any pains to extirpate my opinions, or prove your own, only say what you would write thereon, or what you would teach me in case I were teachable. Be for once in earnest, and let me know some one conclusion of yours before we part; or I shall entreat Crito to violate the laws of hospitality towards those who have violated the laws of philosophy, by hanging out false lights to one benighted in ignorance and error. I appeal to you (said he, turning to Crito), whether these philosophical knight-errants should not be confined in this castle of yours, till they make reparation. Euphranor has reason, said Crito, and my sentence is, that you remain here in durance till you have done something towards satisfying the engagement I am under, having promised, he should know your opinions from yourselves, which you also agreed to.

XXVII. *Alc.* Since it must be so, I will now reveal what I take to be the sum and substance, the grand arcanum and ultimate conclusion, of our sect, and that in two words, ΠΑΝΤΑ ΥΠΟΔΗΨΙΣ. *Cri.* You are then a downright sceptic. But, sceptic as you are, you own it probable there is a God, certain that the Christian religion is useful, possible it may be true, certain that if it be, the minute philosophers are in a bad way. This being the case, how can it be questioned what course a wise man should take? Whether the principles of Christians or infidels are truest may be made a question; but which are safest can be none. Certainly if you doubt of all opinions you must doubt of your own; and then, for aught you know, the Christian may be true. The more doubt, the more room there is for faith, a sceptic of all men having the least right to de-

Digitized by Google

mand evidence. But whatever uncertainty there may be in other points, thus much is certain: either there is or is not a God: there is or is not a revelation: man either is or is not an agent: the soul is or is not immortal. If the negatives are not sure, the affirmatives are possible. If the negatives are improbable, the affirmatives are probable. In proportion as any of your ingenious men finds himself unable to prove any one of these negatives, he hath grounds to suspect he may be mistaken. A minute philosopher, therefore, that would act a consistent part, should have the diffidence, the modesty, and the timidity, as well as the doubts, of a sceptic; not pretend to an ocean of light, and then lead us to an abyss of darkness. If I have any notion of ridicule, this is most ridiculous. But your ridiculing what, for aught you know, may be true, I can make no sense of. It is neither acting as a wise man with regard to your own interest, nor as a good man with regard to that of your country.

XXVIII. Tully saith somewhere, *Aut undique religionem tolle aut usquequaque conserva:* Either let us have no religion at all, or let it be respected. If any single instance can be shewn of a people that ever prospered without some religion, or if there be any religion better than the Christian, propose it in the grand assembly of the nation to change our constitution, and either live without religion, or introduce that new religion. A sceptic, as well as other men, is member of a community, and can distinguish between good and evil, natural or political. Be this then his guide as a patriot, though he be no Christian. Or if he doth not pretend even to this discernment, let him not pretend to correct or alter what he knows nothing of: neither let him that only doubts behave as if he could demonstrate. Timagoras is wont to say, I find my country in possession of certain tenets: they appear to have a useful tendency, and, as such, are encouraged by the legislature; they

Digitized by Google

make a main part of our constitution: I do not find these innovators can disprove them, or substitute things more useful and certain in their stead: out of regard therefore to the good of mankind, and the laws of my country, I shall acquiesce in them. I do notsay Timagoras is a Christian, but I reckon him a patriot. Not to inquire in a point of so great concern is folly, but it is still a higher degree of folly to condemn without inquiring. Lysicles seemed heartily tired of this conversation. It is now late, said he to Alciphron, and all things are ready for our departure. Every one hath his own way of thinking; and it is as impossible for me to adopt another man's, as to make his complexion and features mine. Alciphron pleaded that, having complied with Euphranor's conditions, they were now at liberty: and Euphranor answered that, all he desired having been to know their tenets, he had nothing further to pretend.

XXIX. The philosophers being gone, I observed to Crito how unaccountable it was, that men so easy to confute should yet be so difficult to convince. This, said Crito, is accounted for by Aristotle, who tells us, that arguments have not an effect on all men, but only on them whose minds are prepared by education and custom, as land is for seed.* Make a point never so clear, it is great odds, that a man, whose habits and the bent of whose mind lie in a contrary way shall be unable to comprehend it. So weak a thing is reason in competition with inclination. I replied, This answer might hold with respect to other persons and other times: but when the question was of inquisitive men, in an age wherein reason was so much cultivated, and thinking so much in vogue, it did not seem satisfactory. I have known it remarked, said Crito, by a man of much observation, that in the present age thinking is more talked of but less practised than in ancient times; and that since the revival of learning men have read much and wrote much,

* Ethic. ad Nicom. lib. x. c. ix.

Digitized by Google

but thought little; insomuch that with us to think closely and justly is the least part of a learned man, and none at all of a polite man. The free-thinkers, it must be owned, make great pretensions to thinking, and yet they shew but little exactness in it. A lively man, said he, and what the world calls a man of sense, are often destitute of this talent, which is not a mere gift of nature, but must be improved and perfected, by much attention and exercise on very different subjects, a thing of more pains and time than the hasty men of parts in our age care to take. Such were the sentiments of a judicious friend of mine: and, if you are not already sufficiently convinced of these truths, you need only cast an eye on the dark and confused, but nevertheless admired, writers of this famous sect: and then you will be able to judge, whether those who are led by men of such wrong heads can have very good ones of their own. Such, for instance, was Spinosa, the great leader of our modern infidels, in whom are to be found many schemes and notions much admired and followed of late years: such as undermining religion under the pretence of vindicating and explaining it: the maintaining it not necessary to believe in Christ according to the flesh: the persuading men that miracles are to be understood only in a spiritual and allegorical sense: that vice is not so bad a thing as we are apt to think: that men are mere machines impelled by fatal necessity. I have heard, said I, Spinosa represented as a man of close argument and demonstration. He did, replied Crito, demonstrate; but it was after such a manner, as any one may demonstrate any thing. Allow a man the privilege to make his own definitions of common words, and it will be no hard matter for him to infer conclusions, which in one sense shall be true and in another false, at once seeming paradoxes and manifest truisms. For example, let but Spinosa define natural right to be natural power, and he will easily demonstrate, that whatever a man can do he hath a

Digitized by Google

right to do.* Nothing can be plainer than the folly of this proceeding: but our pretenders to the *lumen siccum* are often so passionately prejudiced against religion, as to swallow the grossest nonsense and sophistry of weak and wicked writers for demonstration.

XXX. And so great a noise do these men make, with their thinking, reasoning, and demonstrating, as to prejudice some well-meaning persons against all use and improvement of reason. Honest Demea, having seen a neighbour of his ruined by the vices of a free-thinking son, contracted such a prejudice against thinking, that he would not suffer his own to read Euclid, being told it might teach him to think; till a friend convinced him the epidemical distemper was not thinking, but only the want and affectation of it. I know an eminent free-thinker, who never goes to bed without a gallon of wine in his belly, and is sure to replenish before the fumes are off his brain, by which means he has not had one sober thought these seven years; another, that would not for the world lose the privilege and reputation of free-thinking, who games all night, and lies in bed all day: and as for the outside or appearance of thought in that meagre minute philosopher Ibycus, it is an effect, not of thinking, but of carking, cheating, and writing in an office. Strange, said he, that such men should set up for free-thinkers! But it is yet more strange that other men should be out of conceit with thinking and reasoning, for the sake of such pretenders. I answered, that some good men conceived an opposition between reason and religion, faith and knowledge, nature and grace; and that consequently, the way to promote religion was, to quench the light of nature, and discourage all rational inquiry.

XXXI. How right the intentions of these men may be, replied Crito, I shall not say; but surely their notions are very wrong. Can any thing be more dishonour-

* Tractat. Politic. cap. ii.

Digitized by Google

able to religion, than the representing it as an unreasonable, unnatural, ignorant institution? God is the father of all lights whether natural or revealed. Natural concupiscence is one thing, and the light of nature another. You cannot therefore argue from the former against the latter: neither can you from science, falsely so called, against real knowledge. Whatever therefore is said of the one in Holy Scripture is not to be interpreted of the other. I insisted, that human learning in the hands of divines had from time to time created great disputes and divisions in the church. As abstracted metaphysics, replied Crito, have always a tendency to produce disputes among Christians as well as other men, so it should seem that genuine truth and knowledge would allay this humour, which makes men sacrifice the undisputed duties of peace and charity to disputable notions. After all, said I, whatever be said for reason, it is plain, the sceptics and infidels of theage are not to be cured by it. I will not dispute this point, said Crito; in order to cure a distemper, you should consider what produced it. Had men reasoned themselves into a wrong opinion, one might hope to reason them out of it. But this is not the case; the fidelity of most minute philosophers seeming an effect of very different motives from thought and reason, little incidents, vanity, disgust, humour, inclination, without the least assistance from reason, are often known to make infidels. Where the general tendency of a doctrine is disagreeable, the mind is prepared to relish and improve every thing that with the least pretence seems to make against it. Hence the coarse manners of a country curate, the polite ones of a chaplain, the wit of a minute philosopher, a jest, a song, a tale, can serve instead of a reason for infidelity. Bupalus preferred a rake in the church, and then made use of him as an argument against it. Vice, indolence, faction, and fashion, produce minute philosophers, and mere petu-

Digitized by Google

lancy not a few. Who then can expect a thing so irrational and capricious should yield to reason? It may, nevertheless, be worth while to argue against such men, and expose their fallacies, if not for their own sake, yet for the sake of others; as it may lessen their credit, and prevent the growth of their sect, by removing a prejudice in their favour, which sometimes inclines others as well as themselves to think they have made a monopoly of human reason.

XXXII. The most general pretext which looks like reason, is taken from the variety of opinions about religion. This is a resting-stone to a lazy and superficial mind: but one of more spirit and a juster way of thinking, makes it a step whence he looks about, and proceeds to examine, and compare the differing institutions of religion. He will observe, which of these is the most sublime and rational in its doctrines, most venerable in its mysteries, most useful in its precepts, most decent in its worship? Which createth the noblest hopes, and most worthy views? He will consider their rise and progress; which oweth least to human arts or arms? Which flatters the senses and gross inclinations of men? Which adorns and improves the most excellent part of our nature? Which hath been propagated in the most wonderful manner? Which hath surmounted the greatest difficulties, or shewed the most disinterested zeal and sincerity in its professors? He will inquire, which best accords with nature and history? He will consider, what savours of the world, and what looks like wisdom from above? He will be careful to separate human allay from that which is Divine; and upon the whole, form his judgment like a reasonable free-thinker. But instead of taking such a rational course, one of these hasty sceptics shall conclude without demurring, there is no wisdom in politics, no honesty in dealings, no knowledge in philosophy, no truth in religion: and all by one and the same sort of inference, from the numerous examples

Digitized by Google

of folly, knavery, ignorance, and error, which are to be met with in the world. But, as those who are unknowing in every thing else, imagine themselves sharpsighted in religion, this learned sophism is oftenest levelled against Christianity.

XXXIII. In my opinion, he that would convince an infidel who can be brought to reason, ought in the first place clearly to convince him of the being of a God, it seeming to me, that any man who is really a theist, cannot be an enemy to the Christian religion: and that the ignorance or disbelief of this fundamental point, is that which at bottom constitutes the minute philosopher. I imagine they, who are acquainted with the great authors in the minute philosophy, need not be told of this. The being of a God is capable of clear proof, and a proper object of human reason; whereas the mysteries of his nature, and indeed whatever there is of mystery in religion, to endeavour to explain, and prove by reason, is a vain attempt. It is sufficient if we can shew there is nothing absurd or repugnant in our belief of those points, and, instead of framing hypotheses to explain them, we use our reason only for answering the objections brought against them. But on all occasions, we ought to distinguish the serious, modest, ingenuous man of sense, who hath scruples about religion, and behaves like a prudent man in doubt, from the minute philosophers, those profane and conceited men, who must needs proselyte others to their own doubts. When one of this stamp presents himself, we should consider what species he is of: whether a first or a second hand philosopher, a libertine, scorner, or sceptic? Each character requiring a peculiar treatment. Some men are too ignorant to be humble, without which there can be no docility: but though a man must in some degree have thought, and considered to be capable of being convinced, yet it is possible the most ignorant may be laughed out of his opinions. I knew a woman of sense

Digitized by Google

reduce two minute philosophers, who had long been a nuisance to the neighbourhood, by taking her cue from their predominant affectations. The one set up for being the most incredulous man upon earth, the other for the most unbounded freedom. She observed to the first, that he who had credulity sufficient to trust the most valuable things, his life and fortune, to his apothecary and lawyer, ridiculously affected the character of incredulous, by refusing to trust his soul, a thing in his own account but a mere trifle, to his parish-priest. The other, being what you call a beau, she made sensible how absolute a slave he was in point of dress, to him the most important thing in the world, while he was earnestly contending for a liberty of thinking, with which he never troubled his head; and how much more it concerned and became him to assert an independency on fashion, and obtain scope for his genius, where it was best qualified to exert itself. The minute philosophers at first hand are very few, and considered in themselves, of small consequence: but their followers, who pin their faith upon them, are numerous, and not less confident than credulous; there being something in the air and manner of these second-hand philosophers, very apt to disconcert a man of gravity and argument, and much more difficult to be borne than the weight of their objections.

XXXIV. Crito having made an end, Euphranor declared it to be his opinion, that it would much conduce to the public benefit, if, instead of discouraging free-thinking, there was erected in the midst of this free country a dianoetic academy, or seminary for free-thinkers, provided with retired chambers and galleries, and shady walks and groves, where, after seven years spent in silence and meditation, a man might commence a genuine free-thinker, and from that time forward have licence to think what he pleased, and a badge to distinguish him from counterfeits. In good earnest, said

Digitized by Google

Crito, I imagine that thinking is the great *desideratum* of the present age; and that the real cause of whatever is amiss, may justly be reckoned the general neglect of education, in those who need it most, the people of fashion. What can be expected where those who have the most influence, have the least sense, and those who are sure to be followed set the worst example? Where youth so uneducated are yet so forward? Where modesty is esteemed pusillanimity, and a deference to years, knowledge, religion, laws, want of sense and spirit? Such untimely growth of genius would not have been valued or encouraged by the wise men of antiquity; whose sentiments on this point are so ill suited to the genius of our times, that it is to be feared modern ears could not bear them. But however ridiculous such maxims might seem to our British youth, who are so capable and so forward to try experiments, and mend the constitution of their country, I believe it will be admitted by men of sense, that if the governing part of mankind would in these days, for experiment's sake, consider themselves in that old Homerical light as pastors of the people, whose duty it was to improve their flock, they would soon find that this is to be done by an education very different from the modern, and other-guess maxims than those of the minute philosophy. If our youth were really inured to thought and reflection, and an acquaintance with the excellent writers of antiquity, we should soon see that licentious humour, vulgarly called *free-thinking*, banished from the presence of gentlemen, together with ignorance and ill taste; which as they are inseparable from vice, so men follow vice for the sake of pleasure, and fly from virtue through an abhorrence of pain. Their minds therefore betimes should be formed and accustomed to receive pleasure and pain from proper objects, or, which is the same thing, to have their inclinations and aversions rightly placed. Καλῶς χαίρειν ἢ μισεῖν. This, according to Plato

Digitized by Google

and Aristotle, was ὀρθὴ παιδεία, the *right education.** And those who, in their own minds, their health, or their fortunes, feel the cursed effects of a wrong one, would do well to consider, they cannot better make amends for what was amiss in themselves, than by preventing the same in their posterity. While Crito was saying this, company came in, which put an end to our conversation.

* Plato in Protag. et Aristot. Ethic. ad Nicom. lib. ii. cap. ii. et lib. x. cap. ix.

Digitized by Google

Digitized by Google

PASSIVE OBEDIENCE;

OR, THE

CHRISTIAN DOCTRINE

OF NOT RESISTING THE SUPREME POWER,

PROVED AND VINDICATED, UPON THE

PRINCIPLES

OF THE

LAW OF NATURE.

IN A DISCOURSE DELIVERED AT THE COLLEGE-CHAPEL.

Digitized by Google

Digitized by Google

TO THE READER.

THAT an absolute passive obedience ought not to be paid to any civil power, but that submission to government should be measured and limited by the public good of the society; and that therefore subjects may lawfully resist the supreme authority, in those cases where the public good shall plainly seem to require it; nay, that it is their duty to do so, inasmuch as they are all under an indispensable obligation to promote the common interest: these and the like notions, which I cannot help thinking pernicious to mankind and repugnant to *right reason*, having of late years been industriously cultivated, and set in the most advantageous lights by men of parts and learning, it seemed necessary to arm the youth of our university against them, and take care they go into the world well principled; I do not mean obstinately prejudiced in favour of a party, but from an early acquaintance with their duty, and the clear rational grounds of it, determined to such practices as may speak them good Christians and loyal subjects.

In this view, I made three discourses not many months since in the College-chapel, which some who heard them thought it might be of use to make more public: and indeed, the false accounts that are gone abroad concerning them, have made it necessary. Ac-

Digitized by Google

cordingly I now send them into the world under the form of one entire discourse.

To conclude; as in writing these thoughts it was my endeavour to preserve that cool and impartial temper which becomes every sincere inquirer after truth, so I heartily wish they may be read with the same disposition.

Digitized by Google

ROMANS, CHAP. XIII. VER. 2.

Whosoever resisteth the Power, resisteth the Ordinance of God.

I. It is not my design to inquire into the particular nature of the government and constitution of these kingdoms; much less to pretend to determine concerning the merits of the different parties now reigning in the state. Those topics I profess to lie out of my sphere, and they will probably be thought by most men, improper to be treated of in an audience almost wholly made up of young persons, set apart from the business and noise of the world, for their more convenient instruction in learning and piety. But surely it is in no respec unsuitable to the circumstances of this place to inculcate and explain every branch of the law of nature; or those virtues and duties which are equally binding in every kingdom or society of men under heaven; and of this kind I take to be that Christian duty of not resisting the supreme power implied in my text, "Whosoever resisteth the power, resisteth the ordinance of God." In treating on which words I shall observe the following method.

II. First, I shall endeavour to prove, that there is an absolute unlimited nonresistance or passive obedience due to the supreme civil power, wherever placed in any nation. Secondly, I shall inquire into the grounds and reasons of the contrary opinion. Thirdly, I shall consider the objections drawn from the pretended consequences of non-resistance to the supreme power. In handling these points, I intend not to build on the authority of Holy Scripture, but altogether on the principles of reason common to all mankind; and that, be-

Digitized by Google

cause there are some very rational and learned men, who being verily persuaded, an absolute passive subjection to any earthly power, is repugnant to right reason, can never bring themselves to admit such an interpretation of Holy Scripture (however natural and obvious from the words), as shall make that a part of Christian religion, which seems to them in itself manifestly absurd, and destructive of the original inherent rights of human nature.

III. I do not mean to treat of that submission, which men are either in duty or prudence obliged to pay inferior or executive powers; neither shall I consider where or in what persons the supreme or legislative power is lodged in this or that government. Only thus much I shall take for granted, that there is in every civil community, somewhere or other, placed a supreme power of making laws, and enforcing the observation of them. The fulfilling of those laws, either by a punctual performance of what is enjoined in them, or, if that be inconsistent with reason or conscience, by a patient submission to whatever penalties the supreme power hath annexed to the neglect or transgression of them, is termed *loyalty*; as on the other hand, the making use of force and open violence, either to withstand the execution of the laws, or ward off the penalties appointed by the supreme power, is properly named *rebellion*. Now to make it evident, that every degree of rebellion is criminal in the subject, I shall in the first place endeavour to prove that loyalty is a natural or moral duty; and disloyalty, or rebellion in the most strict and proper sense, a vice or breach of the law of nature. And, secondly, I propose to shew that the prohibitions of vice, or negative precepts of the law of nature, as, "Thou shalt not commit adultery, Thou shalt not forswear thyself, Thou shalt not resist the supreme power," and the like, ought to be taken in a most absolute, necessary, and immutable sense; insomuch, that the attainment of the greatest good, or deliverance from the greatest evil, that

Digitized by Google

can befal any man or number of men in this life, may not justify the least violation of them. First then I am to shew that loyalty is a moral duty, and disloyalty or rebellion in the most strict and proper sense a vice, or breach of the law of nature.

IV. Though it be a point agreed amongst all wise men, that there are certain moral rules or laws of nature, which carry with them an eternal and indispensable obligation; yet concerning the proper methods for discovering those laws, and distinguishing them from others dependent on the humour and discretion of men, there are various opinions; some direct us to look for them in the Divine ideas, others in the natural inscriptions on the mind; some derive them from the authority of learned men, and the universal agreement and consent of nations. Lastly, others hold that they are only to be discovered by the deductions of reason. The three first methods must be acknowledged to labour under great difficulties, and the last has not, that I know, been any where distinctly explained, or treated of so fully as the importance of the subject doth deserve. I hope therefore it will be pardoned, if in a discourse of passive obedience, in order to lay the foundation of that duty the deeper, we make some inquiry into the origin, nature, and obligation, of moral duties in general, and the *criterions* whereby they are to be known.

V. Self-love being a principle of all others the most universal, and the most deeply engraven in our hearts, it is natural for us to regard things, as they are fitted to augment or impair our own happiness; and accordingly we denominate them *good* or *evil*. Our judgment is ever employed in distinguishing between these two, and it is the whole business of our lives, to endeavour, by a proper application of our faculties, to procure the one and avoid the other. At our first coming into the world, we are entirely guided by the impressions of sense, sensible pleasure being the infallible characteristic of pre-

Digitized by Google

sent good, as pain is of evil. But by degrees, as we grow up in our acquaintance with the nature of things, experience informs us, that present good is afterwards often attended with a greater evil; and on the other side, that present evil is not less frequently the occasion of procuring to us a greater future good. Besides, as the nobler faculties of the human soul begin to display themselves, they discover to us goods far more excellent than those which affect the senses. Hence an alteration is wrought in our judgments, we no longer comply with the first solicitations of sense, but stay to consider the remote consequences of an action, what good may be hoped, or what evil feared from it, according to the wonted course of things. This obliges us frequently to overlook present momentary enjoyments, when they come in competition with greater and more lasting goods, though too far off, or of too refined a nature to affect our senses.

VI. But as the whole earth, and the entire duration of those perishing things contained in it, is altogether inconsiderable, or in the prophet's expressive style, *less than nothing* in respect of eternity, who sees not that every reasonable man ought so to frame his actions, as that they may most effectually contribute to promote his eternal interest? And since it is a truth evident by the light of nature, that there is a sovereign omniscient spirit, who alone can make us for ever happy, or for ever miserable; it plainly follows, that a conformity to his will, and not any prospect of temporal advantage, is the sole rule whereby every man who acts up to the principles of reason, must govern and square his actions. The same conclusion doth likewise evidently result from the relation which God bears to his creatures. God alone is maker and preserver of all things. He is therefore with the most undoubted right the great legislator of the world; and mankind are by all the ties of duty, no less than interest, bound to obey his laws.

VII. Hence we should above all things endeavour

Digitized by Google

to trace out the Divine will or the general design of Providence with regard to mankind, and the methods most directly tending to the accomplishment of that design, and this seems the genuine and proper way for discovering the laws of nature. For laws being rules directive of our actions to the end intended by the legislator, in order to attain the knowledge of God's laws, we ought first to inquire what that end is, which he designs should be carried on by human actions. Now, as God is a being of infinite goodness, it is plain the end he proposes is *good*. But God enjoying in himself all possible perfection, it follows that it is not his own good, but that of his creatures. Again, the moral actions of men are entirely terminated within themselves, so as to have no influence on the other orders of intelligences or reasonable creatures; the end therefore to be procured by them can be no other than the good of men. But as nothing in a natural state can entitle one man more than another to the favour of God, except only moral goodness, which consisting in a conformity to the laws of God doth presuppose the being of such laws, and law ever supposing an end, to which it guides our actions, it follows that antecedent to the end proposed by God, no distinction can be conceived between men; that end therefore itself or general design of Providence is not determined or limited by any respect of persons; it is not therefore the private good of this or that man, nation or age, but the general well-being of all men, of all nations, of all ages of the world, which God designs should be procured by the concurring actions of each individual. Having thus discovered the great end, to which all moral obligations are subordinate, it remains, that we inquire what methods are necessary for the obtaining that end.

VIII. The well-being of mankind must necessarily be carried on one of these two ways: either first, without the injunction of any certain universal rules of mo-

Digitized by Google

rality, only by obliging every one upon each particular occasion, to consult the public good, and always to do that, which to him shall seem in the present time and circumstances, most to conduce to it. Or, secondly, by enjoining the observation of some determinate, established laws, which, if universally practised, have from the nature of things an essential fitness to procure the well-being of mankind; though in their particular application they are sometimes, through untoward accidents, and the perverse irregularity of human wills, the occasions of great sufferings and misfortunes, it may be, to very many good men. Against the former of these methods there lie several strong objections. For brevity I shall mention only two.

IX. First, it will thence follow, that the best men for want of judgment, and the wisest for want of knowing all the hidden circumstances and consequences of an action, may very often be at a loss how to behave themselves; which they would not be, in case they judged of each action, by comparing it with some particular precept, rather than by examining the good or evil which in that single instance it tends to procure: it being far more easy to judge with certainty, whether such or such an action be a transgression of this or that precept, than whether it will be attended with more good or ill consequences. In short, to calculate the events of each particular action is impossible, and though it were not, would yet take up too much time to be of use in the affairs of life. Secondly, if that method be observed, it will follow that we can have no sure standard, to which, comparing the actions of another, we may pronounce them good or bad, virtues or vices. For since the measure and rule of every good man's actions is supposed to be nothing else but his own private disinterested opinion, of what makes most for the public good at that juncture; and since this opinion must unavoidably in different men, from their particular views and circum-

Digitized by Google

stances, be very different; it is impossible to know, whether any one instance of parricide or perjury, for example, be criminal. The man may have had his reasons for it, and that which in me would have been a heinous sin, may be in him a duty. Every man's particular rule is buried in his own breast, invisible to all but himself, who therefore can only tell whether he observes it or no. And since that rule is fitted to particular occasions, it must ever change as they do: hence it is not only various in different men, but in one and the same man at different times.

X. From all which it follows, there can be no harmony or agreement between the actions of good men: no apparent steadiness or consistency of one man with himself, no adhering to principles: the best actions may be condemned, and the most villanous meet with applause. In a word, there ensues the most horrible confusion of vice and virtue, sin and duty, that can possibly be imagined. It follows therefore that the great end, to which God requires the concurrence of human actions, must of necessity be carried on by the second method proposed, namely, the observation of certain, universal, determinate rules or moral precepts, which, in their own nature, have a necessary tendency to promote the well-being of the sum of mankind, taking in all nations and ages, from the beginning to the end of the world.

XI. Hence upon an equal comprehensive survey of the general nature, the passions, interests, and mutual respects, of mankind; whatsoever practical proposition doth to right reason evidently appear to have a necessary connexion with the universal well-being included in it, is to be looked upon as enjoined by the will of God. For he that willeth the end, doth will the necessary means conducive to that end; but it hath been shewn, that God willeth the universal well-being of mankind should be promoted by the concurrence of each parti-

Digitized by Google

cular person; therefore every such practical proposition, necessarily tending thereto, is to be esteemed a decree of God, and is consequently a law to man.

XII. These propositions are called *laws of nature*, because they are universal, and do not derive their obligation from any civil sanction, but immediately from the Author of nature himself. They are said to be *stamped on the mind*, to be *engraven on the tables of the heart*, because they are well known to mankind, and suggested and inculcated by conscience. Lastly, they are termed *eternal rules of reason*, because they necessarily result from the nature of things, and may be demonstrated by the infallible deductions of reason.

XIII. And notwithstanding that these rules are too often, either by the unhappy concurrence of events, or more especially by the wickedness of perverse men, who will not conform to them, made accidental causes of misery to those good men, who do; yet this doth not vacate their obligation; they are ever to be esteemed the fixed unalterable standards of moral good and evil; no private interest, no love of friends, no regard to the public good, should make us depart from them. Hence when any doubt arises concerning the morality of an action, it is plain, this cannot be determined by computing the public good, which in that particular case it is attended with, but only by comparing it with the eternal law of reason. He who squares his actions by this rule, can never do amiss, though thereby he should bring himself to poverty, death, or disgrace: no, not though he should involve his family, his friends, his country, in all those evils which are accounted the greatest and most insupportable to human nature. Tenderness and benevolence of temper are often motives to the best and greatest actions; but we must not make them the sole rule of our actions; they are passions rooted in our nature, and like all other passions must be restrained and kept under, otherwise they may pos

Digitized by Google

sibly betray us into as great enormities as any other unbridled lust. Nay, they are more dangerous than other passions, insomuch as they are more plausible, and apt to dazzle and corrupt the mind with the appearance of goodness and generosity.

XIV. For the illustration of what has been said, it will not be amiss, if from the moral we turn our eyes on the natural world. *Homo ortus est* (says Balbus in Cicero*) *ad mundum contemplandum, et imitandum:* and surely, it is not possible for free intellectual agents to propose a nobler pattern for their imitation than nature, which is nothing else but a series of free actions produced by the best and wisest agent. But it is evident that those actions are not adapted to particular views, but all conformed to certain general rules, which being collected from observation, are by philosophers termed laws of nature. And these indeed are excellently suited to promote the general well-being of the creation: but what from casual combinations of events, and what from the voluntary motions of animals, it often falls out, that the natural good not only of private men, but of entire cities and nations, would be better promoted by a particular suspension, or contradiction, than an exact observation of those laws. Yet for all that, nature still takes its course; nay, it is plain that plagues, famines, inundations, earthquakes, with an infinite variety of pains and sorrows; in a word, all kinds of calamities public and private do arise from a uniform steady observation of those general laws, which are once established by the Author of nature, and which he will not change or deviate from upon any of those accounts, how wise or benevolent soever it may be thought by foolish men to do so. As for the miracles recorded in Scripture, they were always wrought for confirmation of some doctrine or mission from God, and not for the sake of the particular natural goods, as health or life, which some men

* De Natura Deorum, lib. ii.

Digitized by Google

might have reaped from them. From all which it seems sufficiently plain, that we cannot be at a loss, which way to determine, in case we think God's own methods the properest to obtain his ends, and that it is our duty to copy after them, so far as the frailty of our nature will permit.

XV. Thus far in general, of the nature and necessity of moral rules, and the *criterion* or mark whereby they may be known. As for the particulars, from the foregoing discourse, the principal of them may without much difficulty be deduced. It hath been shewn that the law of nature is a system of such rules or precepts, as that if they be all of them, at all times, in all places, and by all men observed, they will necessarily promote the well-being of mankind, so far as it is attainable by human actions. Now, let any one who hath the use of reason, take but an impartial survey of the general frame and circumstances of human nature, and it will appear plainly to him, that the constant observation of truth, for instance, of justice, and chastity, hath a necessary connexion with their universal well-being; that therefore they are to be esteemed virtues or duties, and that, "Thou shalt not forswear thyself, Thou shalt not commit adultery, Thou shalt not steal," are so many unalterable moral rules, which to violate in the least degree is vice or sin. I say, the agreement of these particular practical propositions, with the definition, or *criterion* premised, doth so clearly result from the nature of things, that it were a needless digression, in this place, to enlarge upon it. And from the same principle, by the very same reasoning, it follows that loyalty is a moral virtue, and, "Thou shalt not resist the supreme power," a rule or law of nature, the least breach whereof hath the inherent stain of moral turpitude.

XVI. The miseries inseparable from a state of anarchy are easily imagined. So insufficient is the wit or strength of any single man, either to avert the evils, or

Digitized by Google

procure the blessings of life, and so apt are the wills of different persons to contradict and thwart each other, that it is absolutely necessary, several independent powers be combined together, under the direction (if I may so speak) of one and the same will, I mean the law of the society. Without this there is no politeness, no order, no peace, among men, but the world is one great heap of misery and confusion; the strong as well as the weak, the wise as well as the foolish, standing on all sides exposed to all those calamities, which man can be liable to in a state where he has no other security, than the not being possessed of any thing which may raise envy or desire in another. A state, by so much more ineligible than that of brutes, as a reasonable creature hath a greater reflection and foresight of miseries than they. From all which it plainly follows, that loyalty or submission to the supreme authority, hath, if universally practised in conjunction with all other virtues, a necessary connexion with the well-being of the whole sum of mankind; and by consequence, if the *criterion* we have laid down be true, it is, strictly speaking, a moral duty, or branch of natural religion. And therefore, the least degree of rebellion is with the utmost strictness and propriety, a *sin*: not only in Christians, but also in those who have the light of reason alone for their guide. Nay, upon a thorough and impartial view, this submission will, I think, appear one of the very first and fundamental laws of nature, inasmuch as it is civil government which ordains and marks out the various relations between men, and regulates property, thereby giving scope and laying a foundation for the exercise of all other duties. And in truth, whoever considers the condition of man, will scarce conceive it possible that the practice of any one moral virtue should obtain, in the naked forlorn state of nature.

XVII. But since it must be confessed, that in all cases our actions come not within the direction of cer-

Digitized by Google

tain fixed moral rules, it may possibly be still questioned, whether obedience to the supreme power be not one of those exempted cases, and consequently to be regulated by the prudence and discretion of every single person rather than adjusted to the rule of absolute nonresistance. I shall therefore endeavour to make it yet more plain, that, *Thou shalt not resist the supreme power*, is an undoubted precept of morality; as will appear from the following considerations. First, then, submission to government is a point important enough to be established by a moral rule. Things of insignificant and trifling concern, are, for that very reason, exempted from the rules of morality. But government, on which so much depend the peace, order, and well-being, of mankind, cannot surely be thought of too small importance to be secured and guarded by a moral rule. Government, I say, which is itself the principal source under heaven, of those particular advantages, for the procurement and conservation whereof several unquestionable moral rules were prescribed to men.

XVIII. Secondly, obedience to government is a case universal enough to fall under the direction of a law of nature. Numberless rules there may be for regulating affairs of great concernment, at certain junctures, and to some particular persons or societies, which notwithstanding are not to be esteemed moral or natural laws, but may be either totally abrogated or dispensed with; because the private ends they were intended to promote, respect only some particular persons, as engaged in relations not founded in the general nature of man, who on various occasions, and in different postures of things, may prosecute their own designs by different measures, as in human prudence shall seem convenient. But what relation is there more extensive and universal than that of subject and law? This is confined to no particular age or climate, but universally obtains at all times, and in all places, whereever men live in a state exalted above that

Digitized by Google

of brutes. It is therefore evident, that the rule forbidding resistance to the law or supreme power, is not, upon pretence of any defect in point of universality, to be excluded from the number of the laws of nature.

XIX. Thirdly, there is another consideration, which confirms the necessity of admitting this rule for a moral or natural law: namely, because the case it regards is of too nice and difficult a nature to be left to the judgment and determination of each private person. Some cases there are so plain and obvious to judge of, that they may safely be trusted to the prudence of every reasonable man; but in all instances, to determine, whether a civil law is fitted to promote the public interest; or whether submission or resistance will prove most advantageous in the consequence; or when it is, that the general good of a nation may require an alteration of government, either in its form, or in the hands which administer it: these are points too arduous and intricate, and which require too great a degree of parts, leisure, and liberal education, as well as disinterestedness and thorough knowledge in the particular state of a kingdom, for every subject to take upon him the determination of them. From which it follows, that upon this account also, nonresistance, which, in the main, nobody can deny to be a most profitable and wholesome duty, ought not to be limited by the judgment of private persons to particular occasions, but esteemed a most sacred law of nature.

XX. The foregoing arguments do, I think, make it manifest, that the precept against rebellion is on a level with other moral rules. Which will yet further appear from this fourth and last consideration. It cannot be denied, that right reason doth require some common stated rule or measure, whereby subjects ought to shape their submission to the supreme power; since any clashing or disagreement in this point must unavoidably tend to weaken and dissolve the society. And it is unavoidable, that there should be great clashing, where it is

Digitized by Google

left to the breast of each individual to suit his fancy with a different measure of obedience. But this common stated measure must be either the general precept forbidding resistance, or else the public good of the whole nation; which last, though it is allowed to be in itself something certain and determinate; yet, forasmuch as men can regulate their conduct only by what appears to them, whether in truth it be what it appears or no; and since the prospects men form to themselves of a country's public good, are commonly as various as its landscapes, which meet the eye in several situations: it clearly follows, that to make the public good the rule of obedience, is in effect, not to establish any determinate, agreed, common measure of loyalty, but to leave every subject to the guidance of his own particular mutable fancy.

XXI. From all which arguments and considerations it is a most evident conclusion, that the law prohibiting rebellion is in strict truth a law of nature, universal reason, and morality. But to this, it will perhaps be objected by some, that whatever may be concluded with regard to resistance, from the tedious deductions of reason, yet there is I know not what turpitude and deformity in some actions, which at first blush shews them to be vicious; but they, not finding themselves struck with such a sensible and immediate horror at the thought of rebellion, cannot think it on a level with other crimes against nature. To which I answer, that it is true, there are certain natural antipathies implanted in the soul, which are ever the most lasting and insurmountable; but as custom is a second nature, whatever aversions are from our early childhood continually infused into the mind, give it so deep a stain as is scarce to be distinguished from natural complexion. And as it doth hence follow, that to make all the inward horrors of soul pass for infallible marks of sin, were the way to establish error and superstition in the world; so, on the other hand, to

Digitized by Google

suppose all actions lawful, which are unattended with those starts of nature, would prove of the last dangerous consequence to virtue and morality. For these pertaining to us as men, we must not be directed in respect of them by any emotions in our blood and spirits, but by the dictates of sober and impartial reason. And if there be any, who find they have a less abhorrence of rebellion than of other villanies, all that can be inferred from it, is, that this part of their duty was not so much reflected on, or so early and frequently inculcated into their hearts, as it ought to have been. Since without question there are other men who have as thorough an aversion for that, as for any other crime.*

XXII. Again, it will probably be objected, that submission to government differs from moral duties, in that it is founded in a contract, which upon the violation of its conditions doth of course become void, and in such case rebellion is lawful: it hath not therefore the nature of a sin or crime, which is in itself absolutely unlawful, and must be committed on no pretext whatsoever. Now, passing over all inquiry and dispute concerning the first obscure rise of government, I observe its being founded on a contract may be understood in a twofold sense, either, first, that several independent persons finding the insufferable inconvenience of a state of anarchy, where every one was governed by his own will, consented and agreed together to pay an absolute submission, to the decrees of some certain legislative; which, though sometimes they may bear hard on the subject, yet must surely prove easier to be governed by, than the violent

* "Il disoit ordinairement qu'il avoit un aussi grand eloignement pour ce peche la que pour assassiner le monde, ou pour voler sur les grands chemins, et qu' enfin il ny avoit rien qui fut plus contraire a son naturel." He (Mr. Pascal) used to say, he had as great an abhorrence of rebellion as of murder, or robbing on the high-way; and that there was nothing more shocking to his nature.—*Vie de M. Pascal*, p. 44.

Digitized by Google

humours and unsteady opposite wills of a multitude of savages. And in case we admit such a compact to have been the original foundation of civil government, it must even on that supposition be held sacred and inviolable.

XXIII. Or, secondly, it is meant that subjects have contracted with their respective sovereigns or legislators to pay, not an absolute, but conditional and limited submission to their laws, that, is, upon condition, and so far forth, as the observation of them shall contribute to the public good: reserving still to themselves a right of superintending the laws, and judging whether they are fitted to promote the public good or no; and (in case they or any of them think it needful) of resisting the higher powers, and changing the whole frame of government by force: which is a right that all mankind, whether single persons or societies, have over those that are deputed by them. But in this sense a contract cannot be admitted for the ground and measure of civil obedience, except one of these two things be clearly shewn: either, first, that such a contract is an express known part of the fundamental constitution of a nation, equally allowed and unquestioned by all as the common law of the land: or, secondly, if it be not express, that it is at least necessarily implied in the very nature or notion of civil polity, which supposes it is a thing manifestly absurd: that a number of men should be obliged to live under an unlimited subjection to civil law, rather than continue wild and independent of each other. But to me it seems most evident, that neither of those points will be proved.

XXIV. And till they are proved beyond all contradiction, the doctrine built upon them ought to be rejected with detestation. Since to represent the higher powers as deputies of the people, manifestly tends to diminish that awe and reverence, which all good men should have for the laws and government of their country. And

Digitized by Google

to speak of a condition, limited loyalty, and I know not what vague and undetermined contracts, is a most effectual means to loosen the bands of civil society; than which nothing can be of more mischievous consequence to mankind. But after all, if there be any man, who either cannot or will not see the absurdity and perniciousness of those notions, he would, I doubt not, be convinced with a witness, in case they should once become current, and every private man take it in his head to believe them true, and put them in practice.

XXV. But there still remains an objection, which hath the appearance of some strength against what has been said. Namely, that whereas civil polity is a thing entirely of human institution, it seems contrary to reason, to make submission to it part of the law of nature, and not rather of the civil law. For how can it be imagined that nature should dictate or prescribe a natural law about a thing, which depends on the arbitrary humour of men, not only as to its kind or form, which is very various and mutable, but even as to its existence; there being no where to be found a civil government set up by nature. In answer to this, I observe first, that most moral precepts do presuppose some voluntary actions, or pacts of men, and are nevertheless esteemed laws of nature. Property is assigned, the signification of words ascertained, and matrimony contracted, by the agreement and consent of mankind; and for all that it is not doubted, whether theft, falsehood, and adultery, be prohibited by the law of nature. Loyalty, therefore, though it should suppose and be the result of human institutions, may, for all that, be of natural obligation. I say, secondly, that, notwithstanding particular societies are formed by men, and are not in all places alike, as things esteemed natural are wont to be, yet there is implanted in mankind a natural tendency or disposition to a social life. I call it *natural*, because it is universal, and because it necessarily results from the

Digitized by Google

differences which distinguish man from beast: the peculiar wants, appetites, faculties, and capacities, of man, being exactly calculated and framed for such a state, insomuch that without it, it is impossible he should live in a condition in any degree suitable to his nature. And since the bond and cement of society is a submission to its laws, it plainly follows, that this duty hath an equal right with any other to be thought a law of nature. And surely that precept which enjoins obedience to civil laws, cannot itself with any propriety be accounted a civil law: it must therefore either have no obligation at all on the conscience, or if it hath, it must be derived from the universal voice of nature and reason.

XXVI. And thus the first point proposed seems clearly made out: namely, that loyalty is a virtue or moral duty; and disloyalty or rebellion, in the most strict and proper sense, a vice or crime against the law of nature. We are now come to the second point, which was to shew, that the prohibitions of vice, or negative precepts of morality, are to be taken in a most absolute, necessary, and immutable sense; insomuch that the attainment of the greatest good, or deliverance from the greatest evil, that can befal any man or number of men in this life, may not justify the least violation of them. But in the first place, I shall explain the reason of distinguishing between positive and negative precepts, the latter only being included in this general proposition. Now the ground of that distinction may be resolved into this; namely, that very often, either through the difficulty or number of moral actions, or their inconsistence with each other, it is not possible for one man to perform several of them at the same time; whereas it is plainly consistent and possible, that any man should, at the same time, abstain from all manner of positive actions whatsoever. Hence it comes to pass, that prohibitions or negative precepts must by every one, in all times and places, be all actually observed: whereas those

Digitized by Google

which enjoin the doing of an action, allow room for human prudence and discretion, in the execution of them: it for the most part depending on various accidental circumstances; all which ought to be considered, and care taken that duties of less moment do not interfere with, and hinder the fulfilling of, those which are more important. And for this reason, if not the positive laws themselves, at least the exercise of them, admits of suspension, limitation, and diversity of degrees. As to the indispensableness of the negative precepts of the law of nature, I shall in its proof offer two arguments; the first from the nature of the thing, and the second from the imitation of God in his government of the world.

XXVII. First, then, from the nature of the thing, it hath been already shewn, that the great end of morality can never be carried on, by leaving each particular person to promote the public good, in such a manner as he shall think most convenient, without prescribing certain determinate universal rules, to be the common measure of moral actions: and, if we allow the necessity of these, and at the same time think it lawful to transgress them, whenever the public good shall seem to require it, what is this, but in words indeed, to enjoin the observation of moral rules, but in effect to leave every one to be guided by his own judgment? than which nothing can be imagined more pernicious and destructive to mankind, as hath been already proved. Secondly, this same point may be collected from the example set us by the Author of nature, who, as we have above observed, acts according to certain fixed laws, which he will not transgress upon the account of accidental evils arising from them. Suppose a prince, on whose life the welfare of a kingdom depends, to fall down a precipice, we have no reason to think, that the universal law of gravitation would be suspended in that case. The like may be said of all other laws of nature, which we do not find to admit of exceptions on particular accounts.

Digitized by Google

XXVIII. And, as without such a steadiness in nature, we should soon, instead of this beautiful frame, see nothing but a disorderly and confused chaos; so if once it become current, that the moral actions of men are not to be guided by certain definite inviolable rules, there will be no longer found that beauty, order, and agreement, in the system of rational beings, or moral world, which will then be all covered over with darkness and violence. It is true, he who stands close to a palace, can hardly make a right judgment of the architecture and symmetry of its several parts, the nearer ever appearing disproportionably great. And if we have a mind to take a fair prospect of the order and general well-being, which the inflexible laws of nature and morality derive on the world, we must, if I may so say, go out of it, and imagine ourselves to be distant spectators of all that is transacted and contained in it; otherwise we are sure to be deceived by the too near view of the little present interests of ourselves, our friends, or our country. The right understanding of what hath been said will, I think, afford a clear solution to the following difficulties.

XXIX. First, it may perhaps seem to some, that in consequence of the foregoing doctrine, men will be left to their own private judgments as much as ever. For, first, the very being of the laws of nature; secondly, the *criterion* whereby to know them; and, thirdly, the agreement of any particular precept with that *criterion*, are all to be discovered by reason and argumentation, in which every man doth necessarily judge for himself: hence upon that supposition, there is place for as great confusion, unsteadiness, and contrariety of opinions and actions, as upon any other. I answer, that however men may differ, as to what were most proper and beneficial to the public to be done or omitted on particular occasions, when they have for the most part narrow and interested views; yet in general conclusions, drawn from an equal and enlarged view of things, it is not pos-

Digitized by Google

sible there should be so great, if any, disagreement at all amongst candid rational inquirers after truth.

XXX. Secondly, the most plausible pretence of all against the doctrine we have premised concerning a rigid indispensable observation of moral rules, is that which is founded on the consideration of the public weal: for since the common good of mankind is confessedly the end which God requires should be promoted by the free actions of men, it may seem to follow, that all good men ought ever to have this in view, as the great mark to which all their endeavours should be directed; if therefore in any particular case, a strict keeping to the moral rule shall prove manifestly inconsistent with the public good, it may be thought agreeable to the will of God, that in that case the rule does restrain an honest disinterested person, from acting for that end to which the rule itself was ordained. For it is an axiom, that *the end is more excellent than the means*, which deriving their goodness from the end, may not come in competition with it.

XXXI. In answer to this, let it be observed, that nothing is a *law* merely because it conduceth to the public good, but because it is decreed by the will of God, which alone can give the sanction of a *law of nature* to any precept, neither is any thing, how expedient or plausible soever, to be esteemed lawful on any other account, than its being coincident with, or not repugnant to, the laws promulgated by the voice of nature and reason. It must indeed be allowed, that the rational deduction of those laws is founded in the intrinsic tendency they have to promote the well-being of mankind, on condition they are universally and constantly observed. But though it afterwards comes to pass, that they accidentally fail of that end, or even promote the contrary, they are nevertheless binding, as hath been already proved. In short, that whole difficulty may be resolved by the following distinction. In framing the general laws of nature, it

Digitized by Google

is granted, we must be entirely guided by the public good of mankind, but not in the ordinary moral actions of our lives. Such a rule, if universally observed, hath, from the nature of things, a necessary fitness to promote the general well-being of mankind: therefore it is a law of nature. This is good reasoning. But if we should say, such an action doth in this instance produce much good, and no harm to mankind; therefore it is lawful: this were wrong. The rule is framed with respect to the good of mankind; but our practice must be always shaped immediately by the rule. They who think the public good of a nation to be the sole measure of the obedience due to the civil power, seem not to have considered this distinction.

XXXII. If it be said, that some negative precepts, *e. g.* "Thou shalt not kill," do admit of limitation, since otherwise it were unlawful for the magistrate, for a soldier in a battle, or a man in his own defence, to kill another; I answer, when a duty is expressed in too general terms, as in this instance, in order to a distinct declaration of it, either those terms may be changed for others of a more limited sense, as *kill* for *murder*, or else from the general proposition remaining in its full latitude, exceptions may be made of those precise cases, which, not agreeing with the notion of murder, are not prohibited by the law of nature. In the former case there is a limitation, but it is only of the signification of a single term too general and improper, by substituting another more proper and particular in its place. In the latter case there are exceptions, but then they are not from the law of nature, but from a more general proposition, which, besides that law, includes somewhat more, which must be taken away in order to leave the law by itself clear and determinate. From neither of which concessions will it follow, that any negative law of nature is limited to those cases only where its particular application promotes the public good, or admits all

Digitized by Google

other cases to be excepted from it, wherein its being actually observed produceth harm to the public. But of this I shall have occasion to say more in the sequel. I have now done with the first head, which was to shew, that there is an absolute, unlimited, passive obedience due to the supreme power, wherever placed in any nation; and come to inquire into the grounds and reasons of the contrary opinion: which was the second thing proposed.

XXXIII. One great principle, which the pleaders for resistance make the ground-work of their doctrine, is, that the law of self-preservation is *prior* to all other engagements, being the very first and fundamental law of nature. Hence, say they, subjects are obliged by nature, and it is their duty, to resist the cruel attempts of tyrants, however authorized by unjust and bloody laws, which are nothing else but the decrees of men, and consequently must give way to those of God or nature. But perhaps, if we narrowly examine this notion, it will not be found so just and clear as some men may imagine, or, indeed, as at first sight it seems to be. For we ought to distinguish between a twofold signification of the terms *law of nature*; which words do either denote a rule or precept for the direction of the voluntary actions of reasonable agents, and in that sense they imply a duty; or else they are used to signify any general rule, which we observe to obtain in the works of nature, independent of the wills of men; in which sense no duty is implied. And in this last acceptation, I grant it is a general law of nature, that in every animal there be implanted a desire of self-preservation, which, though it is the earliest, the deepest, and most lasting of all, whether natural or acquired appetites, yet cannot with any propriety be termed a moral duty. But if in the former sense of the words, they mean that self-preservation is the first and most fundamental law of nature, which therefore must take place of all other natural

Digitized by Google

or moral duties; I think that assertion to be manifestly false, for this plain reason, because it would thence follow, a man may lawfully commit any sin whatsoever to preserve his life, than which nothing can be more absurd.

XXXIV. It cannot indeed be denied, that the law of nature restrains us from doing those things which may injure the life of any man, and consequently our own. But, notwithstanding all that is said of the obligativeness and priority of the law of self-preservation, yet, for aught I can see, there is no particular law, which obliges any man to prefer his own temporal good, not even life itself, to that of another man, much less to the observation of any one moral duty. This is what we are too ready to perform of our own accord; and there is more need of a law to curb and restrain, than there is of one to excite and inflame our self-love.

XXXV. But, secondly, though we should grant the duty of self-preservation to be the first and most necessary of all the positive or affirmative laws of nature; yet, forasmuch as it is a maxim allowed by all moralists, that *evil is never to be committed, to the end good may come of it*, it will thence plainly follow that no negative precept ought to be transgressed for the sake of observing a positive one; and therefore, since we have shewn, *Thou shalt not resist the supreme power*, to be a negative law of nature, it is a necessary consequence, that it may not be transgressed under pretence of fulfilling the positive duty of self-preservation.

XXXVI. A second erroneous ground of our adversaries, whereon they lay a main stress, is that they hold the public good of a particular nation to be the measure of the obedience due from the subject to the civil power, which therefore may be resisted whensoever the public good shall verily seem to require it. But this point hath been already considered, and in truth it can give small difficulty to whoever understands loyalty to be

Digitized by Google

on the same foot with other moral duties enjoined in negative precepts, all which though equally calculated to promote the general well-being, may not nevertheless be limited or suspended under pretext of giving way to the end, as is plain from what hath been premised on that subject.

XXXVII. A third reason which they insist on, is to this effect. All civil authority or right is derived originally from the people; but nobody can transfer that to another which he hath not himself; therefore, since no man hath an absolute unlimited right over his own life, the subject cannot transfer such a right to the prince (or supreme power), who consequently hath no such unlimited right to dispose of the lives of his subjects. In case therefore a subject resist his prince, who, acting according to law, maketh an unjust, though legal, attempt on his life, he does him no wrong; since wrong it is not, to prevent another from seizing what he hath no right to: whence it should seem to follow, that agreeably to reason, the prince, or supreme power, wheresoever placed, may be resisted. Having thus endeavoured to state their argument in its clearest light, I make this answer. First, it is granted, no civil power hath an unlimited right to dispose of the life of any man. Secondly, in case one man resist another invading that which he hath no right to, it is granted he doth him no wrong. But in the third place, I deny that it doth thence follow, the supreme power may consonantly to to reason be resisted; because that although such resistance wronged not the prince or supreme power wheresoever placed, yet it were injurious to the author of nature, and a violation of his law, which reason obligeth us to transgress upon no account whatsoever, as hath been demonstrated.

XXXVIII. A fourth mistake or prejudice which influenceth the impugners of nonresistance, arises from the natural dread of slavery, chains, and fetters, which

Digitized by Google

inspires them with an aversion for any thing, which even metaphorically comes under those denominations. Hence they cry out against us that we would deprive them of their natural freedom, that we are making chains for mankind, that we are for enslaving them, and the like. But how harsh soever the sentence may appear, yet it is most true, that our appetites, even the most natural, as of ease, plenty, or life itself, must be chained and fettered by the laws of nature and reason. This slavery, if they will call it so, or subjection of our passions to the immutable decrees of reason, though it may be galling to the sensual part or the beast, yet sure I am, it addeth much to the dignity of that which is peculiarly human in our composition. This leads me to the fifth fundamental error.

XXXIX. Namely, the mistaking the object of passive obedience. We should consider, that when a subject endures the insolence and oppression of one or more magistrates, armed with the supreme civil power, the object of his submission is, in strict truth, nothing else but right reason, which is the voice of the Author of nature. Think not we are so senseless, as to imagine tyrants cast in a better mould than other men: no, they are the worst and vilest of men, and for their own sakes have not the least right to our obedience. But the laws of God and nature must be obeyed, and our obedience to them is never more acceptable and sincere, than when it exposeth us to temporal calamities.

XL. A sixth false ground of persuasion to those we argue against, is their not distinguishing between the natures of positive and negative duties. For, say they, since our active obedience to the supreme civil power is acknowledged to be limited, why may not our duty of nonresistance be thought so too? The answer is plain; because positive and negative moral precepts are not of the same nature, the former admitting such limitations and exceptions as the latter are on no account liable to,

Digitized by Google

as hath been already proved. It is very possible that a man in obeying the commands of his lawful governors, might transgress some law of God contrary to them; which it is not possible for him to do, merely by a patient suffering and nonresistance for conscience' sake. And this furnishes such a satisfactory and obvious solution of the forementioned difficulty, that I am not a little surprised to see it insisted on, by men, otherwise, of good sense and reason. And so much for the grounds and reasons of the adversaries of nonresistance. I now proceed to the third and last thing proposed, namely, the consideration of the objections drawn from the pretended consequences of nonresistance.

XLI. First, then, it will be objected, that in consequence of that notion, we must believe that God hath, in several instances, laid the innocent part of mankind under an unavoidable necessity of enduring the greatest sufferings and hardships without any remedy; which is plainly inconsistent with the Divine wisdom and goodness: and therefore the principle from whence that consequence flows, ought not to be admitted as a law of God or nature. In answer to which I observe, we must carefully distinguish between the necessary and accidental consequences of a moral law. The former kind are those which the law is in its own nature calculated to produce, and which have an inseparable connexion with the observation of it; and indeed if these are bad, we may justly conclude the law to be so too, and consequently not from God. But the accidental consequences of a law have no intrinsic natural connexion with, nor do they strictly speaking flow from, its observation, but are the genuine result of something foreign and circumstantial, which happens to be joined with it. And these accidental consequences of a very good law may nevertheless be very bad; which badness of theirs is to be charged on their own proper and necessary cause, and not on the law, which hath no essential tendency to

Digitized by Google

produce them. Now though it must be granted, that a lawgiver infinitely wise and good will constitute such laws for the regulation of human actions, as have in their own nature a necessary inherent aptness to promote the common good of all mankind, and that in the greatest degree that the present circumstances and capacities of human nature will admit, yet we deny that the wisdom and goodness of the lawgiver are concerned, or may be called in question, on account of the particular evils which arise, necessarily and properly, from the *transgression* of some one or more good laws, and but accidently from the *observation* of others. But it is plain that the several calamities and devastations, which oppressive governments bring on the world, are not the genuine necessary effects of the law, that enjoineth a passive subjection to the supreme power, neither are they included in the primary intention thereof, but spring from avarice, ambition, cruelty, revenge, and the like inordinate affections and vices raging in the breasts of governors. They may not therefore argue a defect of wisdom or goodness in God's law, but of righteousness in men.

XLII. Such is the present state of things, so irregular are the wills, and so unrestrained the passions, of men, that we every day see manifest breaches and violations of the laws of nature, which being always committed in favour of the wicked, must surely be sometimes attended with heavy disadvantages and miseries, on the part of those who by a firm adhesion to his laws endeavour to approve themselves in the eyes of their Creator. There are in short no rules of morality, not excepting the best, but what may subject good men to great sufferings and hardships, which necessarily follows from the wickedness of those they have to deal with, and but accidentally from those good rules. And as on the one hand it were inconsistent with the wisdom of God, by suffering a retaliation of fraud, perjury, or the

Digitized by Google

like, on the head of offenders, to punish one transgression by another: so on the other hand it were inconsistent with his justice, to leave the good and innocent a hopeless sacrifice to the wicked. God therefore hath appointed a day of retribution in another life, and in this we have his grace and a good conscience for our support. We should not therefore repine at the Divine laws, or shew a frowardness or impatience of those transient sufferings they accidentally expose us to, which, however grating to flesh and blood, will yet seem of small moment, if we compare the littleness and fleetingness of this present world with the glory and eternity of the next.

XLIII. From what hath been said I think it is plain, that the premised doctrine of nonresistance were safe, though the evils incurred thereby should be allowed never so great. But perhaps upon a strict examination, they will be found much less than by many they are thought to be. The mischievous effects which are charged on that doctrine may be reduced to these two points. First, that it is an encouragement for all governors to become tyrants, by the prospect it gives them of impunity or nonresistance. Secondly, that it renders the oppression and cruelty of those who are tyrants more insupportable and violent, by cutting off all opposition, and consequently all means of redress. I shall consider each of these distinctly. As to the first point, either you will suppose the governors to be good or ill men. If they are good there is no fear of their becoming tyrants. And if they are ill men, that is, such as postpone the observation of God's laws to the satisfying of their own lusts, then it can be no security to them, that others will rigidly observe those moral precepts, which they find themselves so prone to transgress.

XLIV. It is indeed a breach of the law of nature for a subject, though under the greatest and most unjust sufferings, to lift up his hand against the supreme power.

Digitized by Google

But it is a more heinous and inexcusable violation of it, for the persons invested with the supreme power, to use that power to the ruin and destruction of the people committed to their charge. What encouragment therefore can any man have to think that others will not be pushed on by the strong implanted appetite of self-preservation, to commit a crime, when he himself commits a more brutish and unnatural crime, perhaps without any provocation at all? Or is it to be imagined that they who daily break God's laws, for the sake of some little profit or transient pleasure, will not be tempted by the love of property, liberty, or life itself, to transgress that single precept which forbids resistance to the supreme power?

XLV. But it will be demanded, to what purpose then is this duty of nonresistance preached and proved, and recommended to our practice, if in all likelihood, when things come to an extremity, men will never observe it? I answer, to the very same purpose that any other duty is preached. For what duty is there which many, too many, upon some consideration or other, may not be prevailed on to transgress? Moralists and divines do not preach the duties of nature and religion, with a view of gaining mankind to a perfect observation of them; that they know is not to be done. But, however, our pains are answered, if we can make men less sinners than otherwise they would be; if by opposing the force of duty to that of present interest and passion, we can get the better of some temptations, and balance others, while the greatest still remain invincible.

XLVI. But granting those who are invested with the supreme power to have all imaginable security, that no cruel and barbarous treatment whatever could provoke their subjects to rebellion: yet I believe it may be justly questioned, whether such security would tempt them to more or greater acts of cruelty, than jealousy, distrust, suspicion, and revenge, may do in a state less

Digitized by Google

secure. And so far in consideration of the first point, namely, that the doctrine of nonresistance is an encouragement for governors to become tyrants.

XLVII. The second mischievous effect it was charged with, is, that it renders the oppression and cruelty of those who are tyrants more insupportable and violent, by cutting off all opposition, and consequently all means of redress. But, if things are rightly considered, it will appear, that redressing the evils of government by force, is at best a very hazardous attempt, and what often puts the public in a worse state than it was before. For either you suppose the power of the rebels to be but small, and easily crushed, and then this is apt to inspire the governors with confidence and cruelty. Or, in case you suppose it more considerable, so as to be a match for the supreme power supported by the public treasure, forts, and armies, and that the whole nation is engaged in a civil war; the certain effects of this are, rapine, bloodshed, misery, and confusion, to all orders and parties of men, greater and more insupportable by far, than are known under any the most obsolute and severe tyranny upon earth. And it may be that, after much mutual slaughter, the rebellious party may prevail. And if they do prevail to destroy the government in being, it may be they will substitute a better in its place, or change it into better hands. And may not this come to pass without the expense, and toil, and blood of war? Is not the heart of a prince in the hand of God? May he not therefore give him a right sense of his duty, or may he not call him out of the world by sickness, accident, or the hand of some desperate ruffian, and send a better in his stead? When I speak as of a monarchy, I would be understood to mean all sorts of government, wheresoever the supreme power is lodged. Upon the whole, I think we may close with the heathen philosopher, who thought it the part of a wise man, never to attempt the change of government by force, when it could not be

Digitized by Google

mended without the slaughter and banishment of his countrymen: but to sit still, and pray for better times.* For this way may do, and the other may not do; there is uncertainty in both courses. The difference is, that in the way of rebellion, we are sure to increase the public calamities, for a time at least, though we are not sure of lessening them for the future.

XLVIII. But though it should be acknowledged, that in the main, submission and patience ought to be recommended; yet, men will be still apt to demand, whether extraordinary cases may not require extraordinary measures; and therefore in case the oppression be insupportable, and the prospect of deliverance sure, whether rebellion may not be allowed of? I answer, by no means. Perjury, or breach of faith, may, in some possible cases, bring great advantage to a nation, by freeing it from conditions inconsistent with its liberty and public welfare. So likewise may adultery, by procuring a domestic heir, prevent a kingdom's falling into the hands of a foreign power, which would in all probability prove its ruin. Yet will any man say, the extraordinary nature of those cases can take away the guilt of perjury and adultery?† This is what I will not suppose. But it

* Plato in Epist. vii.

† When I wrote this, I could not think any man would avow the justifying those crimes on any pretext: but I since find that an author (supposed the same who published the book entitled, The Rights of the Christian Church), in a discourse concerning obedience to the supreme powers, printed with three other discourses at London, in the year 1709, chap. iv. p. 28. speaking of Divine laws, is not ashamed to assert "There is no law which wholly relates to man, but ceases to oblige, if, upon the infinite variety of circumstances attending human affairs, it happens to be contrary to the good of man." So that, according to this writer, parricide, incest, and breach of faith, become innocent things, if, in the infinite variety of circumstances, they should happen to promote (or be thought by any private person to promote) the public good. After what has been already said, I hope I need not be at any pains to convince the reader of the absurdity and perniciousness of this notion. I shall only

Digitized by Google

hath been shewn, that rebellion is as truly a crime against nature and reason as either of the foregoing; it may not therefore be justified upon any account whatever, any more than they.

XLIX. What! must we then submit our necks to the sword? and is there no help, no refuge, against extreme tyranny established by law? In answer to this, I say in the first place, it is not to be feared that men in their wits should seek the destruction of their people, by such cruel and unnatural decrees as some are forward to suppose. I say, secondly, that in case they should, yet most certainly the subordinate magistrates may not, nay, they ought not, in obedience to those decrees, to act any thing contrary to the express laws of God. And perhaps, all things considered, it will be thought, that representing this limitation of their active obedience by the laws of God or nature, as a duty to the ministers of the supreme power, may prove in those extravagant supposed cases no less effectual for the peace and safety of a nation, than preaching up the power of resistance to the people.

L. Further, it will probably be objected as an absurdity in the doctrine of passive obedience, that it enjoineth subjects a blind implicit submission to the decrees of other men; which is unbecoming the dignity and freedom of reasonable agents; who indeed ought to pay obedience to their superiors, but it should be a rational obedience, such as arises from a knowledge of the equity of their laws, and the tendency they have to promote the public good. To which I answer, that it is not likely a government should suffer much for want of having its laws inspected and amended, by those who

---

observe, that it appears the author was led into it, by a more than ordinary aversion to passive obedience, which put him upon measuring or limiting that duty, and, with equal reason, all others, by the public good, to the entire unhinging of all order and morality among men. And it must be owned the transition was very natural.

Digitized by Google

are not legally entitled to a share in the management of affairs of that nature. And it must be confessed, the bulk of mankind are by their circumstances and occupations so far unqualified to judge of such matters, that they must necessarily pay an implicit deference to some or other; and to whom so properly as to those invested with the supreme power?

LI. There is another objection against absolute submission, which I should not have mentioned, but that I find it insisted on by men of so great note as Grotius and Puffendorf,* who think our nonresistance should be measured by the intention of those who first framed the society. Now, say they, if we suppose the question put to them, whether they meant to lay every subject under the necessity of choosing death, rather than in any case to resist the cruelty of his superiors, it cannot be imagined, they would answer in the affirmative. For this were to put themselves in a worse condition than that which they endeavoured to avoid by entering into society. For although they were before obnoxious to the injuries of many, they had nevertheless the power of resisting them. But now they are bound, without any opposition at all, to endure the greatest injuries from those whom they have armed with their own strength. Which is by so much worse than the former state, as the undergoing an execution is worse than the hazard of a battle. But (passing by all other exceptions which this method of arguing may be liable to), it is evident, that a man had better be exposed to the absolute irresistible decrees, even of one single person, whose own and posterity's true interest it is to preserve him in peace and plenty, and protect him from the injuries of all mankind beside; than remain an open prey to the rage and avarice of every wicked man upon earth, who either exceeds him in strength,

* Grotius de jure belli et pacis, lib. i. chap. iv. sect. 7. et Puffendorf de jure naturæ et gentium, lib. vii. cap. vii. sect. 7.

Digitized by Google

or takes him at an advantage. The truth of this is confirmed, as well by the constant experience of the far greater part of the world, as by what we have already observed concerning anarchy, and the inconsistence of such a state, with that manner of life which human nature requires. Hence it is plain, the objection last mentioned is built on a false supposition; *viz.* That men, by quitting the natural state of anarchy for that of absolute nonresisting obedience to government, would put themselves in a worse condition than they were in before.

LII. The last objection I shall take notice of is, that in pursuance of the premised doctrine, where no exceptions, no limitations, are to be allowed of, it should seem to follow, men were bound to submit without making any opposition to usurpers, or even madmen, possessed of the supreme authority. Which is a notion so absurd, and repugnant to common sense, that the foundation on which it is built may justly be called in question. Now, in order to clear this point, I observe the limitation of moral duties may be understood in a twofold sense, either first as a distinction applied to the terms of a proposition, whereby that which was expressed before too generally is limited to a particular acceptation: and this, in truth, is not so properly limiting the duty as defining it. Or, secondly, it may be understood as a suspending the observation of a duty for avoiding some extraordinary inconvenience, and thereby confining it to certain occasions. And in this last sense only, we have shewn negative duties not to admit of limitation. Having premised this remark, I make the following answer to the objection. Namely, that by virtue of the duty of nonresistance, we are not obliged to submit the disposal of our lives and fortunes to the discretion either of madmen, or of all those who by craft or violence invade the supreme power. Because the object of the submission enjoined subjects by the law of

Digitized by Google

nature is, from the reason of the thing, manifestly limited so as to exclude both the one and the other. Which I shall not go about to prove, because I believe nobody has denied it. Nor doth the annexing such limits to the object of our obedience at all limit the duty itself, in the sense we except against.

LIII. In morality the eternal rules of action have the same immutable universal truth with propositions in geometry. Neither of them of them depends on circumstances or accidents, being at all times, and in all places, without limitation or exception true. *Thou shalt not resist the supreme civil power*, is no less constant and unalterable a rule, for modelling the behaviour of a subject toward the government, than *multiply the height by half the base*, is for measuring a triangle. And as it would not be thought to detract from the universality of this mathematical rule, that it did not exactly measure a field which was not an exact triangle, so ought it not to be thought an argument against the universality of the rule prescribing passive obedience, that it does not reach a man's practice in all cases, where a government is unhinged, or the supreme power disputed. There must be a triangle, and you must use your senses to know this, before there is room for applying your mathematical rule. And there must be a civil government, and you must know in whose hands it is lodged, before the moral precept takes place. But where the supreme power is ascertained, we should no more doubt of our submission to it, than we would doubt of the way to measure a figure we know to be a triangle.

LIV. In the various changes and fluctuations of government, it is impossible to prevent that controversies should sometimes arise concerning the seat of the supreme power. And in such cases subjects cannot be denied the liberty of judging for themselves, or of taking part with some, and opposing others, according to the best of their judgments; all which is consistent

Digitized by Google

with an exact observation of their duty, so long as, when the constitution is clear in the point, and the object of their submission undoubted, no pretext of interest, friends, or the public good, can make them depart from it. In short, it is acknowledged, that the precept enjoining nonresistance is limited to particular objects, but not to particular occasions. And in this it is like all other moral negative duties, which, considered as general propositions, do admit of limitations and restrictions, in order to a distinct definition of the duty; but what is once known to be a duty of that sort, can never become otherwise by any good or ill effect, circumstance, or event whatsoever. And in truth if it were not so, if there we no general inflexible rules, but all negative as well as positive duties might be dispensed with, and warped to serve particular interests and occasions, there were an end of all morality.

LV. It is therefore evident, that as the observation of any other negative moral law, is not to be limited to those instances only, where it may produce good effects; so neither is the observation of nonresistance limited in such sort, as that any man may lawfully transgress it, whensoever, in his judgment, the public good of his particular country shall require it. And it is with regard to this limitation by the effects, that I speak of nonresistance, as an absolute, unconditioned, unlimited duty. Which must inevitably be granted, unless one of these three things can be proved; either, first, that nonresistance is no moral duty: or, secondly, that other negative moral duties are limited by the effects: or, lastly, that there is somethlng peculiar in the nature of nonresistance, which necessarily subjects it to such a limitation, as no other negative moral duty can admit. The contrary to each of which points, if I mistake not, hath been clearly made out.

LVI. I have now briefly gone through the objections drawn from the consequences of nonresistance, which

Digitized by Google

was the last general head I proposed to treat of. In handling this and the other points, I have endeavoured to be as full and clear, as the usual length of these discourses would permit, and throughout to consider the argument with the same indifference, as I should any other part of general knowledge, being verily persuaded that men as Christians are obliged to the practice of no one moral duty, which may not abide the severest test of reason.

Digitized by Google

ARITHMETICA

ABSQUE

ALGEBRA AUT EUCLIDE

DEMONSTRATA.

CUI ACCESSERUNT,

COGITATA NONNULLA

DE

RADICIBUS SURDIS, DE ÆSTU ÆRIS, DE LUDO ALGEBRAICO, &c.

AUTORE * * * * ART. BAC. TRIN. COL. DUB.

Digitized by Google

Digitized by Google

MAXIMÆ SPEI PUERO,

D. GULIELMO PALLISER,

REVERENDISSIMI ARCHIEPISCOPI CASSELENSIS

FILIO UNICO

INGENIO, SOLERTIA, ERUDITIONE,

ANNOS LONGE PRÆEUNTI,

NUMERISQUE ADEO OMNIBUS AD PRÆSTANDUM

INGENS ALIQUOD SCIENTIIS LUMEN

AC

INCREMENTUM

NATO

HUNC ARITHMETICÆ TRACTATUM,

IN

EXIGUUM SUMMI AMORIS PIGNUS,

OFFERT ET DICAT

AUTHOR.

Digitized by Google

Digitized by Google

PRÆFATIO.

Plerosque scientiarum mathematicarum procos in ipso earundem limine caecutientes, sentio simul et doleo. Nimirum cum ea sit, apud nos saltem, mathemata discendi ratio, ut primo arithmetica, deinde geometria, postremo algebra addiscatur, Tacqueti vero arithmeticam legamus, eam autem nemo probe intelligat, qui algebram non prælibarit; hinc fit ut plerique mathesi operam navantes, dum bene multorum minoris usus theorematum demonstrationes studiose evolvunt, interea operationum arithmeticarum, quarum ea est vis et præstantia, ut non modo caeteris disciplinis mathematicis, verum etiam hominum cujuscunque demum sortis usibus commodissime famulentur, principia ac rationes intactas praetereant. Quod si quis tandem aliquando, post emensum mathesecos cursum, oculos in prædictum Tacqueti librum retorqueat, multa ibi methodo obscura, et quæ intellectum non tam illuminet quam convincat, demonstrata; multa horrido porismatum et theorematum satellitio stipata inveniet.

Sed nec alius quisquam, quod sciam, arithmeticam seorsim ab algebra demonstravit. Proinde e re tyronum futurum ratus, si hæc mea qualiacunque in lucem emittenem, ea postquam, si minus omnia, pleraque certe per integrum fere triennium in seriniis delituerint, publici juris facio. Quæ cum praeter ipsos operandi modos eorundem etiam demonstrationes ex proprius et genuinis arithmeticæ principiis petitas complectantur, mirabitur fortasse quispiam, quod noster hic tractatus mole vulgares arithmeticorum libros, in quibus praxis tantum

Digitized by Google

tradatur, haud exæquæt. Hoc autem exinde provenit, quod cum operationum τὸ διότι explicarem in præceptis et exemplis, quæ vulgus arithmeticorum ad nauseam usque prosequitur, contractior fui; nec eo forsan obscurior. Quippe tametsi cæco ad singulos fere gressus regendos opus sit manuductore, in clara tamen demonstrationum luce versanti sufficit, si quis tenendum tramitem vel strictim exponat. Quamobrem omnes matheseos candidati ad regularum arithmeticæ rationes ac fundamenta percipiendum animos adjungant, summopere velim et exoptem.

Neque id tanti moliminis est, ut plerique fortasse imaginentur. Quas attulimus demonstrationes faciles (ni fallor) sunt et concisæ; nec principia aliunde mutuantur; ex algebra nihil, nihil ex Euclide tanquam notum supponitur. Ubique malui obvia et familiari aliqua ratione a priori veritatem praxeos comprobare, quam per prolixam demonstrationum apagogicarum seriem ad absurdum deducere. Radicum quadratarum et cubicarum doctrinam ex ipsa involutionis arithmeticæ natura eruere tentavi. Atque ea, meo quidem judicio, ad numerosam radicum extractionem illustrandum magis accommoda videtur, quam quæ ex elemento secundo Euclidis, aut ex analysi potestatum algebraicarum vulgo adferri solent. Regula vulgaris pro Alligatione plurium rerum non nisi difficulter admodum et per species demonstratur: ejus igitur loco novam, quæ vix ulla demonstratione indigeat, e proprio penu substitui. Regulam falsi, utpote mancam et fere inutilem, consulto prætermisi. Ac, si nihil aliud, novitas fortassis aliqua placebit.

Neminem transcripsi; nullius scrinia expilavi. Nempe id mihi imprimis propositum fuerat, ut numeros tractandi leges ex ipsis principiis, proprij exercitii et recreationis causa, deducerem: quod et deinceps horis subsecivis prosecutus sum. Nec mihi hoc in loco absque ingrati animi labe præterire liceat reverendum virum Johannem Hall, S.T.D. academiæ nostræ vice-præpo-

Digitized by Google

situm, ibidemque linguæ Hebraicæ professorem dignissimum, cui viro optimo quum me multis nominibus obstringi lubens agnoscam, tum non id minimum duco, quod illius hortatu ad suavissimum matheseos studium incitatus fuerim.

Monstravi porro ad quem collimaverim scopum: quousque ipsum assecutus sim, penes æquos rerum æstimatores esto judicium. Candido quippe horum examini istas studiorum meorum primitias libenter submitto; quicquid interim scioli sentiant et malevoli, parum solicitus.

Digitized by Google

Digitized by Google

ARITHMETICÆ

PARS PRIMA.

CAP. I.

DE NOTATIONE ET ENUNCIATIONE NUMERORUM.

Novem sunt notæ numerales, *viz.* 1, 2, 3, 4, 5, 6, 7, 8, 9, quibus una cum cyfra (0) utuntur arithmetici, ut tantum non infinitos numerorum ordines exprimant. Omne illius rei artificium in eo positum est, quod notarum numeralium loci ratione decupla progrediantur. Series autem numerorum, ea lege quoad locorum valores procedentium, in membra sive periodos enunciationis causa secatur: rem totam oculis conspiciendam subjecta exhibet tabella,

Digitized by Google

NOTARUM NUMERALIUM SERIES.

Centuriæ	349 · 758 · 102 · 003 · 505 · 739 · 047 · 32 · 568 · 918 · 300 · 052 · 704	Quintilionum.
Decades		
Unitates		
Centuriæ		Quatrilionum.
Decades		
Unitates		
Centuriæ		Trilionum.
Decades		
Unitates		
Centuriæ		Bilionum.
Decades		
Unitates		
Centuriæ		Millionum.
Decades		
Unitates		
Centuriæ		Millium.
Decades		
Unitates		
Centuriæ		Integrorum.
Decades		
Unitates		
Unesimæ		Partes.
Decimæ		
Centesimæ		
Unesimæ		Millesimarum.
Decimæ		
Centesimæ		
Unesimæ		Millionesimarum.
Decimæ		
Centesimæ		
Unesimæ		Bilionesimarum.
Decimæ		
Centesimæ		
Unesimæ		Trilionesimarum.
Decimæ		
Centesimæ		
Unesimæ		Quatrilionesimarum.
Decimæ		
Centesimæ		

qua exponitur notarum numeralium series, in terniones distributa: membra autem seu periodi millecupla, loci decupla ratione progrediuntur. *E. g.* Numerus positus in loco unitatum (is per subjectum punctum dignoscitur)

Digitized by Google

denotat septem res integras quascunque, vel saltem ut integras spectatas; numerus ei a dextris proximus tres partes decimas ejusdem integri; qui vero locum immediate præcedentem occupat, indigitat quatuor decadas eorundem integrorum. Eadem proportione decupla locus quilibet sequentem superat, a præcedente superatur.

Porro cum infinita unitatum multiplicatione et divisione notarum series infinite ultra citraque unitatum locum producatur, adeoque innumeri oriantur loci; ut distincti eorum valores exprimantur, opus est solummodo trium vocum continua repetitione, modo ternio quivis sive periodus suo insigniatur nomine, uti factum in tabella. Nam progrediendo a loco unitatum versus sinistram, prima periodus numerat simpliciter unitates, sive integra; secunda, millia; tertia, milliones; quarta, biliones; atque ita porro. Similiter, servata analogia, in periodis infra unitatem descendentibus, occurrunt primo partes simpliciter, dein millesimæ, millionesimæ, bilionesimæ, &c. atque hæ quidem partiendæ in unesimas, decimas, centesimas; illi vero colligendi in unitates, decades, centurias.

Ut itaque enunciemus numerum quavis e tota serie figura designatum 1,°. respiciendum est ad valorem notæ simplicem: 2°. ad valorem loci; postremo, periodi. *E. g.* enuncianda sit 9: in quinta sinistrorsum periodo, nota simpliciter sumpta valet novem: ratione loci, novem decadas; ratione demum periodi, novem decadas trilionum. Proponatur 5: in tertia periodo, simpliciter sumpta dicit quinque; ratione loci, quinque unitates; ratione periodi, quinque unitates millionum, seu quinque milliones. In secunda infra unitatem periodo, detur 8: simplex notæ valor est octo; ratione loci, octo, centesimæ; ratione periodi, octo centesimæ millesimarum.

Quod si numerus enunciandus non habeat adscripta vocabula valores periodorum locorumque indigitantia, is punctatione a loco unitatum dextrorsum sinistrorsumque instituta in terniones distinguatur; deinde, cuique loco

Digitized by Google

et periodo assignato nomine, proferatur. Sit, *e. g.* numerus propositus 73·480·195. Notis in periodos distinctis, primum quæro quinam sint valores figuræ ad sinistram primæ; quæ, quoniam collocatur in secundo loco tertiæ periodi, valet septem decadas millionum: quia vero numeri ratione decupla progrediuntur, intellecto notæ primæ valore, cæterarum valores ordine sequuntur. Sic ergo enunciabimus numerum propositum; septem decades et tres unitates millionum, quatuor centuriæ et octo decades millium, una centuria, novem decades et quinque unitates; vel contractius, septuaginta tres milliones, quadringenta octaginta millia, centum nonaginta quinque. Hinc cernimus quod cyfra, licet per se nil valeat, necessario tamen scribatur, ut unicuique notæ debitum assignemus locum.

Facillimum erit numeros quantumvis magnos scribere et enunciare, modo quæ dicti sunt perpendantur, quorum etiam scientia in sequentibus maximi erit momenti: siquidem qua ratione operationes arithmeticæ in digitis perficiantur ipsa docet natura; arte vero opus est ad easdem in numeris grandioribus accurate exercendas, quæ sane omnis in eo versatur, ut quod opus simul et uno quasi ictu peragi non sinit humanæ mentis angustia, id in plures partiamur opellas, sigillatim inquirentes digitorum aggregata, differentias, producta, &c. dein hæc ita componamus ut exhibeant summam, residuum, aut productum, &c. totale, cujus rei ratio omnis et artificium petitur ex simplici locorum progressione, et in ea ultimo fundatur.

N. B. Non me latet arithmeticos nonnullos numerorum seriem aliter ac a nobis factum est partiri, sc. in senarios (composita denominatione) loco ternionum. Cum vero methodum quam tradimus sequantur etiam * alii, visum est et nobis eam (utpote simpliciorem) retinere.

* v. g. Cl. Wallisius in Mathes. Univers. et le Pere Lamy dans ses Elemens des Mathematiques.

Digitized by Google

CAP. II.

DE ADDITIONE.

ADDITIONE quæritur duorum pluriumve numerorum aggregatum; quod ut obtineatur, numeri aggregandi sub invicem scribantur eâ lege, ut unitates unitatibus, decades decadibus, partes decimæ decimis, &c. respondeant. Quamobrem ubi adnexæ fuerint partes decimales, oportet unitatis locum adjecto commate insignire; deinde sumpto a dextris initio notæ in primo loco occurrentes unà addantur; decades autem siquæ proveniant, adjectis punctulis notatæ sequenti loco annumerandæ sunt, cujus itidem numeris (reservatis interim decadibus, quæ ad locum sequentem pertinent) in unam summam aggregati infra scribantur. Atque ita porro.

E. g. In primo infra-scriptorum exemplo, 9 et 5 faciunt 14; decadem punctatum servo, cum 4 progredior; 4 et 8 sunt 12, punctatâ igitur decade, 2 subscribo; ad secundum locum accedens, reperio 6, quibus addo 2, *scil.* decadas in primo punctatas, 8 et 2 faciunt decadem, quam notatam servans, quæ sola superest 1 subscribo. Et sic deinceps.

			l. *s.* *d.*
Addend.	2018· 8·225· 4369	523,9702 81,35 60,2005	7 8 9 3 12· 5 0 7 2
Sum.	14612	665,5207	11 8 4

Quòd si proponantur collígendæ res diversarum specierum, simili prorsus methodo operandum, dummodo habeatur ratio proportionis, juxta quam progrediuntur diversa rerum genera. *E. g.* Quoniam Lib. Sol. et Den. non ratione decupla ut numeri progrediuntur, adeoque non 10 denarii sed 12 constituant solidum, non (10)

Digitized by Google

solidi sed 20, libram; propterea in hisce speciebus addendis, loco decadis, numerus quilibet in denariis, duodenarius, in solidis, vicenarius, sequenti loco adscribendus est.

CAP. III.

DE SUBDUCTIONE.

Subductione quæritur duorum numerorum differentia, sive quodnam superfuerit residuum sublato uno ex altero; cujus obtinendi causâ, numeri minoris nota quælibet notæ majoris ejusdem loci subscribatur; deinde subducendi prima dextrorsum nota ex nota suprascripta auferatur, residuumque infra notetur; atque ita porro, usque dum perficiatur subductio totius.

Si vero accidat numerum aliquem minorem esse quàm ut ex eo nota subscripta auferri possit, is decade augeatur, mutuata scil. unitate a loco sequente.

Detur 1189 subtrahendus ex 32034. Numeris ut in exemplo subjecto scriptis, aggredior subductionem notæ primæ 9 ex supraposita 4; verùm cùm 4 ne semel quidem contineat 9, adjecta decade, fiat 14; ex 14 subductis 9, restant 5: dein versus sinistram pergens, reperio 8. à 2 (loco 3, habita nimirum ratione mutuatæ decadis) subducenda, quod quoniam fieri nequit, aufero 8 a 12, et restant 4; proxima subducendi nota est 1, quæ quia a nihilo, sive 0, non potest subtrahi, loco cyfræ 0, substituo 9, (9 inquam, quoniam mutuata decas unitate numero præcedenti jam ante adjecta truncatur) ablata demum 1 ab 1, restat nihil. Porro peracta subductione restant 3, quæ itidem subscribo.

Haud dissimili ratione subductio specierum diversarum perficitur: modò advertamus non semper decadem,

Digitized by Google

sed numerum qui dicit quotuplus locus quilibet sit præcedentis, in supplementum defectus notæ alicujus mutuandum esse.

			l. s. d.
Subduc.	32034 1189	7329,645 3042,100	4 8 3 2 6 5
Resid.	30845	4287,545	2 2 10

N. B. Ex dictis liquet arithmeticæ (quam hactenus tradidimus) artificium consistere in perficiendo per partes id quod una vice fieri nequeat; rationem vero in additione reservandi, in subductione, mutuandi decadas, a decupla locorum progressione omnino petendam esse.

CAP. IV.

DE MULTIPLICATIONE.

MULTIPLICATIONE toties ponitur multiplicandus quoties jubet multiplicans; seu quæritur numerus qui eandem habeat rationem ad multiplicandum, quam multiplicans ad unitatem. Numerus autem iste appellatur productum sive rectangulum, cujus latera seu factores dicuntur uterque tum multiplicandus, tum numerus per quem multiplicatur.

Ut productum duorum numerorum inveniamus, scripto numero multiplicante sub multiplicando, hic multiplicetur per quamlibet notam illius, incipiendo a dextris; cujusque autem producti nota prima directè subscribatur notæ multiplicanti, reliquæ versus lævam ordine sequantur.

Peracta multiplicatione, producta particularia in

Digitized by Google

unam colligantur summam, ut habeatur productum totale, in quo tot loci partibus sunt assignandi, quot sunt in utroque factore.

Proponatur 30,94 ducendus in (sive multiplicandus per) 26, 5. Quinquies 4 dant 20, cujus primam figuram 0 subscribo notæ multiplicanti (5), reliquam 2 servo; porro 5 in 9 dant 45; 5 cum 2 servatis faciunt 7, quæ subscribo, 4 sequenti loco ponenda servans; et sic deinceps.

	30,94 26,5	52896 24	6000 56
	15470 18564 6188	211584 105792	36 30
Prod. tot.	819,910	1269504	336000

Quoniam numeri cujusque duplex est valor, ut multiplicatio recte instituatur, oportet utriusque rationem haberi; adeo ut nota quævis multiplicetur juxta valorem cum simplicem tum localem figuræ multiplicantis. Hinc nota prima cujusque particularis producti scribitur sub nota multiplicante. *E. g.* in secundi exempli multiplicatore, nota 2 valet duas (non unitates, sed) decadas; ergo in 6 (primam multiplicandi notam) ducta producet duodecim (non quidem unitates, verùm) decadas. Proinde primam producti notam in loco decadum, *h. e.* directè sub nota multiplicante 2, poni oportet.

Ob eandem rationem, ubi in factoribus occurrunt partes, numerus ex prima multiplicandi nota in primam multiplicantis ducta genitus, tot locis detrudendus est infra notam multiplicatam, quot multiplicans dextrorsum ab unitate distat; adeoque tot loci in producto totali partibus seponendi sunt, quot fuerant in utroque factore.

N. B. Si factori utrique aut alterutri a dextris acce-

Digitized by Google

dant cyfræ non interruptæ, multiplicatione in reliquis notis instituta, omittantur istæ mox producto totali adjiciendæ: quippe cum loci proportione decupla progrediantur liquet numerum decuplum, centuplum, millecuplum, &c. suiipsius evadere, si modo uno, duobus aut tribus locis promoveatur.

CAP. V.

DE DIVISIONE.

Divisio opponitur multiplicationi; nempe productum quod hæc conficit, illa sibi dissolvendum sive dividendum proponit. Numerus in divisione inventus, dicitur *Quotiens:* siquidem dicit quoties dividendus continet divisorem, vel (quod idem est) rationem dividendi ad divisorem; seu denique, partem dividendi a divisore denominatam.

In divisione, scriptis dividendo et divisore sicut in exemplorum subjectorum primo, captoque initio a sinistris, pars dividendi divisori æqualis, vel eum proxime superans (intelligo valorem tantùm simplicem) interposito puncto seponatur: quærendum dein quoties divisor in membro isto contineatur, numerusque proveniens erit prima quotientis nota; porro divisor ducatur in notam inventam, productoque a membro dividendo ablato, residuum infra notetur, cui adscripta sequente dividendi nota, confit novum membrum dividendum, unde eruatur nota secunda quotientis, mox in divisorem ducenda, ut producto ex membro proxime diviso ablato, residuum unà cum sequente dividendi nota, præbeat novum membrum; atque ita porro, usque dum absoluta fuerit operatio. Subductis demum locis decimalibus divisoris ab iis qui sunt in dividendo, residuum indicabit quot loci partibus assignandi sunt in quotiente; quod si nequeat

Digitized by Google

fieri subductio, adjiciantur dividendo tot cyfræ decimales quot opus est.

Peracta divisione, si quid superfuerit, adjectis cyfris decimalibus continuari poterit divisio, donec vel nihil restet, vel id tam exiguum sit, ut tuto negligi possit; aut etiam quotienti apponantur notæ residuæ, subscripto iisdem divisore.

Si uterque, dividendus nempe et divisor, desinat in cyfras, hæ æquali numero utrinque rescindantur; si vero divisor solus cyfris terminetur, eæ omnes inter operandum negligantur, totidemque postremæ dividendi notæ abscissæ, sub finem operationis restituantur, scripto infra lineolam divisore.

Proponatur 45882, dividendus per 67. Quoniam divisor major est quam 45, adjecta nota sequente fiat 458, membrum primo dividendum; hoc interposito puncto a reliquis dividendi notis secerno. 6 in 45 continetur septies, et superest 2; veruntamen quoniam 7 non itidem septies in 28 reperitur, ideo minuendus est quotiens. Sumtur 6; 6 in 45 invenitur sexies, atque insuper 9, quin et 98 continet 7 sexies, est igitur 6 nota prima quotientis; hæc in divisorem ducta procreat subducendum 402, quo sublato a 458, restant 56; his adscribo 3, proximam dividendi notam, unde confit novum membrum, nimirum 563, quod sicuti prius dividens, invenio 8 pro nota secunda quotientis: 8 in 67 dat 536, hunc subduco a membro 563, residuoque 27 adjiciens reliquam dividendi notam, *viz.* 2, habeo 272 pro novo dividendo, quod divisum dat 4, qua primo in quotiente scripta, dein in divisorem ducta, productoque ex 272 ablato, restant 4 quotienti, scripto infra lineolam divisore, adjicienda.

Expeditior est operatio, ubi subductio cujusque notæ multiplicationem immediate sequitur; ipsa autem multiplicatio a sinistra dextrorsum instituitur. *E. g.* Sit 18129980 dividendus per 156, (*vide* exempl. 3) sub 1219 primo dividendi membro scripto divisore, constat

Digitized by Google

hunc in illo septies contineri; quamobrem 7 scribo in quotiente. Septies 1 est 7, quibus subductis ex 12, deleo tum notam multiplicatam 1 tum 12 partem membri unde auferebatur productum, residuum 5 supra notans; dein accedo ad proximam divisoris notam 5; 7 in 5 dat 35; 35 ex 51 ablatis, restant 16, quæ supra scribo, deletis 51 et 5. Deinde autem 7 in 6 duco, productoque 42 ex 69 substracto, supersunt 27, quæ proinde noto, deletis interim tum 69 tum 6, ultima dividendi figura. Porro divisorem jam integre deletum, denuo versus dextram uno loco promotum scribo, perque illum membrum suprascriptum (quod quidem fit ex residuo membri proxime divisi sequente nota aucto) quemadmodum præcedens divido. Eodem modo divisor usque promoveatur quoad dividendum totum percurrerit.

67)458.32(684$\frac{4}{67}$	200)6200	41
402		173
	2) 82 (41	67173
563	8	11119999(78205
536		1999999
	02	11111
272	2	111
268		
	00	
004		

Jam vero præceptorum ratio dabitur; et primum quidem liquet, cur quotientem per partes investigemus.

2. Quæri potest, cur *v. g.* in exemplo supra allato habeatur 6 pro quotiente membri primi per divisorem divisi, nam 67 in 458 centuriis (pro centuriis nimirum habendæ sunt cûm duobus locis sinistrorsum ab unitate distent) non sexies, sed sexcenties continetur? Respondeo, revera non simpliciter 6, sed 600 scribi in quotiente; duæ enim notæ postmodum inventæ istam sequuntur, atque ita quidem quotienti debitus semper conservatur valor; nam unicuique notæ tot loci in quoti-

Digitized by Google

ente, quot membro unde eruebatur, in dividendo postponuntur.

3. Quandoquidem nota quælibet quotientis indicat quoties id, ex quo eruebatur, dividendi membrum divisorem contineat; æquum est ut ex divisore, in notam proxime inventam ducto, confletur subducendum: tunc nempe aufertur divisor toties ad amussim quoties in dividendo continetur, nisi forsan æquo major aut minor sit numerus ultimò in quotiente scriptus. De illo quidem errore constabit, si productum tam magnum fuerit, ut subduci nequeat; de hoc, si e contra productum oriatur tam exiguum, ut peracta subductione residuum divisore majus sit vel ei æquale.

4. Ratio cur tot loci partibus seponantur in quotiente, quot cum iis qui sunt in divisore æquentur locis decimalibus dividendi, ex eo cernitur, quod numerus dividendus sit productum, cujus factores sunt divisor et quotus, adeoque ille tot habeat locos decimales quot hi ambo, id quod demonstravimus de multiplicatione agentes.

5. Patet cyfras decimales ad calceos dividendi adjectas ipsius valorem non immutare. Nam integros quod attinet, ii dummodo eodem intervallo supra unitates ascendant, eundem sortiuntur valorem; decimales vero non nisi præpositis cyfris in inferiorem gradum deprimuntur.

6. Quoniam quotiens exponit seu denominat rationem dividendi ad divisorem, patet proportione illa sive ratione existente eadem, eundem fore quotientem; sed abjectis cyfris communibus, ratio seu numerorum ad invicem habitudo minime mutatur. Sic *v. g.* 200 est ad 100, vel (quod idem est) 200 toties continet 100, quoties 2 continet 1, quod sane per se manifestum est.

Digitized by Google

CAP. VI.

DE COMPOSITIONE ET RESOLUTIONE QUADRATI.

PRODUCTUM ex numero in seipsum ducto, dicitur numerus *quadratus*. Numerus autem ex cujus multiplicatione oritur quadratus, nuncupatur *latus*, sive *radix quadrata*; et operatio qua numeri propositi radicem investigamus, dicitur *extractio radicis quadratæ*, cujus intelligendæ causâ juvabit genesin ipsius quadrati, partesque ex quibus componitur, earumque ordinem situmque contemplari. Veruntamen quoniam in inquirenda rerum cognitione consultius est a simplicissimis et facillimis ordiri, a contemplatione geneseos quadrati, ex radice binomia oriundi, initium capiamus.

Attentiùs itaque intuendum est, quid fiat ubi numerus duabus notis constans in seipsum ducatur: et primo quidem manifestum est, primam a dextra radicis notam in notam supra positam, seipsam nempe, duci; unde oritur quadratum minoris membri. Deinde vero, eadem nota in sequentem multiplicandi, *i. e.* alteram radicis notam ducta, provenire rectangulum ab utroque radicis membro conflatum constat. Porro peracta multiplicatione totius multiplicandi per primam radicis notam, ad secundam accedimus, qua in primam multiplicandi notam ducta, oritur jam denuo rectangulum duarum radicisbinomiæ notarum; deinde secunda multiplicandi nota, *i. e.* eadem per eandem, multiplicata, dat secundi membri radicis binomiæ quadratum.

Hinc ergo colligimus, quadratum quodvis a radice binomia procreatum constare primò ex quadrato membri minoris, secundò duplici rectangulo membrorum, tertiò quadrato membri majoris.

Digitized by Google

Proponatur radix binomia, *v. g.* 23 quadranda, juxta ea quæ cap. 4. traduntur; primo duco 3 in 3, unde producitur 9, quadratum membri minoris. Secundo duco 3 in 2, alteram radicis notam; prodit 6, rectangulum utriusque notæ. Tertio, ex 2 in 3 ducto oritur jam secunda vice rectangulum membrorum. Quarto, 2 in 2 gignit 4, quadratum membri majoris.

```
23
23
——
69
46
```

Progrediamur ad genesin quadrati a radice trimembri; atque hic primo quidem prima radicis nota in integram radicem ducta procreat, primo, primi membri quadratum; secundo, rectangulum membrorum primi ac secundi; tertio, rectangulum membrorum primi ac tertii. Secundo, secunda radicis nota multiplicans radicem dat, primo, rectangulum membrorum primi ac secundi; secundo, quadratum membri secundi; tertio, rectangulum membrorum secundi ac tertii. Tertio, ex tertia radicis nota in radicem ducta oritur, primo, rectangulum membrorum primi ac tertii; secundo, rectangulum membrorum secundi ac tertii; tertio, quadratum tertii membri radicis.

Hinc porro colligimus quadratum quodvis a radice trinomia genitum complecti, primo, quadratum notæ radicis primæ; secundo, duplex rectangulum notæ primæ in duas reliquas ductæ; tertio, quadratum duarum reliquarum, *i, e.* bina singularum quadrata et earundem duplex rectangulum, quæ quidem constituere quadratum duarum notarum jam ante ostendimus.

Simili methodo ostendi potest quadratum 4, 5, quotlibet notarum continere, primo, quadratum notæ infimæ; secundo, duplex rectangulum ex infima in sequentes omnes ducta genitum; tertio, quadratum notarum omnium sequentium; quod ipsum (uti ex præmissis manifestum est) continet quadratum notæ a dextris secundæ, duplex rectangulum ejusdem in omnes sequentes ductæ, quadratum notarum omnium sequentium; quod pariter continet quadratum notæ tertiæ, bina rec-

Digitized by Google

tangula illius et sequentium harumque quadratum, atque ita porro, usque quoad ventum sit ad quadratum altissimæ radicis notæ.

Inventis tandem partibus ex quibus componitur quadratum, restat ut circa earum ordinem situmque dispiciamus. Si itaque quadratum incipiendo a dextris in biniones partiamur, ex genesi quam supra tradidimus constabit, primum (a sinistris) membrum occupari a quadrato notæ primæ sive altissimæ, simul ac ab ea duplicis rectanguli ex notis prima et secunda in invicem ductis conflati portione, quæ extra primum sequentis binionis locum redundat: secundi locum primum continere dictum duplex rectangulum, atque insuper quicquid quadrati notæ secundæ excurrat; secundum capere quadratum notæ secundæ, et quod redundat duplicis rectanguli duarum priorum notarum in tertiam ductarum, quoad notam infimam ad locum primum tertii binionis pertinentis, et sic deinceps. *v. g.* in exemplo apposito, membrum primum 10 continet 9 quadratum notæ primæ 3, simul ac 1 quo 12 (duplex rectangulum notæ 3 in sequentem 2 ductæ) locum primum secundi membri transcendit. Primus locus secundi binionis capit 2 (duplicis rectanguli notarum 3 et 2 reliquum,) atque etiam id quod extra locum proxime sequentem redundat, &c.

```
  321
  321
 ----
  321
 642
963
 ------
10·30·41
```

Perspecta jam compositione quadrati, ad ejusdem analysin accedamus. Proponatur itaque numerus quivis, (*E. g.* 103041) unde eliciendæ sit radix quadrata. Hunc incipiens a dextris, in biniones (si par sit locorum numerus, alioqui membrum ultimum ex unica constabit nota) distingue. Quæro dein quadratum maximum in (10) membro versus lævam primo contentum, cujus radix (3) est nota prima radicis indagandæ, ipsum autem quadratum (9) a membro (10) subduco. Ex residuo (1) adjecta (3) nota prima sequentis membri confit dividendus (13), quem divido per notam inventam du-

Digitized by Google

```
103041 (321
  9
 ----
6)13·0
   124
 ----
64)641
 -------
    641
 -------
    000
```

plicatam (*i. e.* 6), quotiens (2) erit nota radicalis secunda; qua primo in divisorem, deinde in seipsam ducta, productisque in unam summam collectis, ita tamen ut posterius uno loco dextrorsum promoveatur (*e. g.* $^{12}4$) habeo numerum subducendum (124), hunc aufero ex dividendo (13) aucto (0) nota reliqua secundi membri: residuo (6) adjicio (4) notam primam tertii binionis, ut fiat novus dividendus (64), qui divisus per (64) duplum radicis hactenus inventæ dat (1) notam tertiam radicis indagandæ; hac tum in divisorem tum in seipsam ducta, factisque ut supra simul aggregatis, summam (641) subduco a dividendo (64) aucto accessione notæ alterius membri tertii: eadem plane methodo pergendum quantumvis producatur operatio.

Si quid post ultimam subductionem superfuerit, id tibi indicio sit, numerum propositum non fuisse quadratum, verumtamen adjectis resolvendo cyfris decimalibus operatio extendi poterit quousque lubet.

Numerus locorum decimalium, si qui fuerint, in resolvendo bipartitus indicabit, quot ponendi sunt in radice, cujus ratio cernitur ex cap. 4.

Ratio operandi abunde patet ex præmissis. Nam *e. g.* adhibui (6) duplum notæ inventæ pro divisore, propterea quod ex tradita quadrati compositione, duplex rectangulum notæ illius (3) in sequentem (2) ductæ dividendum complecti resîcssem, eoque adeo diviso per duplum factoris unius (3) confactorem ejus (2) *h. e.* notam proximam radicis innotescere. Similiter, subducendum conflavi ex duplici rectangulo quotientis et divisoris, simul ac quotientis quadrato in unum, ea qua dictum est ratione, collectis; quia bina illa rectangula et quadratum eo ordine in residuo et membro sequente, ex quibus fiebat subductio, contineri deprehenderam, atque ita quidem potestatis resolutio ex ipsius compositione facili admodum negotio deducitur.

Digitized by Google

CAP. VII.

DE COMPOSITIONE ET RESOLUTIONE CUBI.

Radix in quadratum ducta procreat cubum. Ut sternamus viam ad analysin cubi, a compositione potestatis (quemadmodûm in capite præcedenti factum) sûmendum est initium. In productione igitur cubi a radice binomia primum radicis membrum offendit, primo, suiipsius quadratum, unde cubus notæ primæ; secundo, duplex rectangulum membrorum, unde duplex solidum quadrati notæ primæ in alteram ducti; tertio, quadratum membri alterius, unde solidum ex nota prima et quadrato secundæ genitum. Similiter, facta multiplicatione per membrum secundum, oritur primo, solidum notæ secundæ et quadrati primæ; secundo, duplex solidum notæ primæ et quadrati secundæ; tertio, cubus membri secundi.

Continet ergo cubus a radice binomia procreatus singulorum membrorum cubos et 6 solida, nimirum 3 facta ex quadrato membri utriusvis in alterum ducto.

Hinc ratiocinio ad analogiam capitis præcedentis protracto, constabit, si (ut quadratum in biniones, ita) cubus a quantavis radice genitus, in terniones distribuatur, ternionem seu membrum a sinistris primum continere cubum notæ sinistrorsum primæ, simul ac redundantiam (si quæ sit) 3 solidorum quadrati ejusdem in secundam ducti; locum primum secundi capere dicta solida et redundantiam 3 solidorum quadrati notæ secundæ in primam, locum secundum eadem 3 solida et redundantiam cubi notæ secundæ; tertium occupari a dicto cubo, simul ac redundantia 3 solidorum, ex quadrato notarum præcedentium in tertiam ducto genitorum; locum primum tertii membri solida ultimo memo-

Digitized by Google

rata obtinere, et sic deinceps. Hinc facile derivabimus methodum eliciendæ radicis cubicæ, quæ est ut sequitur.

Incipiendo a dextris, resolvendum (80621568) in terniones (præter membrum postremum quod minus esse potest) punctis interpositis distribuo. Dein cubum maximum (64) in (80) primo versus sinistram membro contentum subduco, scriptaque illius radice (4) in notam primam radicis quæsitæ, residuo (16) adscribo (6) notam proximam resolvendi, unde confit dividendum (166) quod divido per (48) triplum quadrati notæ inventæ: quotiens (3) est nota secunda radicis: hanc duco, primo in divisorem; secundo, ipsius quadratum in triplum notæ primæ; postremo, ipsam in seipsam bis. Producta ea lege aggregata, ut secundum a primo, tertium a secundo, uno loco dextrorsum ponatur, $\left\{\begin{matrix}144\\108\\27\end{matrix}\right\}$ subduco a dividendo aucto accessione duarum notarum reliquarum membri secundi. Ad eundem modum, utut prolixa sit operatio, numerum dividendum semper præstat residuum, adjuncta prima sequentis membri nota: divisorem vero, triplum quadrati notarum radicis hactenus inventarum: et subducendum, nota ultimo reperta in divisorem ducta, ejusdem quadratum in triplum notarum præcedentium; postremo illius cubus, ea qua diximus ratione aggregati, constituent.

```
80.021.568)432
   64
   ----
 48)166.21
     15507
 ---------
 5547)1114568
      1114568
      -------
       0000000
```

Si numerus resolvendus non sit cubus; quod superest, adjectis locis decimalibus, in infinitum exhauriri potest.

Radici assignanda est pars tertia locorum decimalium resolvendi.

N. B. Operationes syntheticæ examinari possunt per analyticas, et vicissim analyticæ per synthetica:

Digitized by Google

adeoque si numero alterutro ex summa duorum subducto, restet alter, recte peracta est additio; et vice versa, extra dubium ponitur subductio, quoties aggregatum subducti et residui æquatur numero majori dato. Similiter, si quotiens in divisorem, aut radix in seipsam ducta, procreet dividendum, aut resolvendum, id tibi indicio sit, in divisionem aut resolutionem nullum repsisse vitium.

Digitized by Google

ARITHMETICÆ

PARS SECUNDA.

CAP. I.

QUID SINT FRACTIONES?

SCRIPTO divisore infra dividendum, ductaque linea intermedia, divisionem utcunque designari, jam ante* monuimus. Hujusmodi autem quotientes dicuntur numeri fracti seu fractiones, propterea quod numerus superior, qui dicitur etiam numerator, dividitur seu frangitur in partes ab inferiore denominatas, qui proinde dicitur denominator: *e. g.* in hac fractione $\frac{2}{4}$ 2 est dividendus seu numerator, 4 divisor seu denominator; ipsa autem fractio indicat quotientem qui oritur ex divisis 2 per 4, *h. e.* quadrantem duarum rerum quarumvis, vel duos quadrantes unius; nempe idem sonant.

N. B. Patet numeros qui partes decimales denotant, quique vulgo fractiones decimales audiunt, subscripto nominatore, per modum fractionum vulgarium exprimi posse. *E. g.* ,25 valent $\frac{25}{100}$; ,004 valent $\frac{4}{1000}$ &c. id quod faciamus oportet, aut saltem factum intelligamus, quotiescunque eæ in fractiones vulgares aut vicissim hæ in illas reducendæ sint, aut aliam quamvis operationem, utrosque fractos, vulgares et decimales ex æquo respicientem, fieri contingat.

* Cap. v. p. 1.

Digitized by Google

CAP. II.

DE ADDITIONE ET SUBDUCTIONE FRACTIONUM.

1. Si fractiones, quarum summa aut differentia quæritur, eundem habent nominatorem, sumatur summa aut differentia numeratorum, cui subscriptus communis nominator quæsitum dabit.

2. Si non sunt ejusdem nominis, ad idem reducantur, nominatores dati in se invicem ducti dabunt novum nominatorem; cujusque autem fractionis numerator, in nominatores reliquarum ductus, dabit numeratorem novæ fractionis datæ æqualis. Dein cum novis fractionibus operandum ut supra.

3. Si integer fractioni addendus sit, aut ab ea subducendus, vel vice versa, is ad fractionem datæ cognominem reducatur; nempe illi in nominatorem datum ducto idem nominator subscribendus est.

Additio	$\frac{1}{5}$ ad $\frac{2}{5}$ sum. $\frac{3}{5}$	
Subductio	$\frac{1}{5}$ a $\frac{2}{5}$ resid. $\frac{1}{5}$	
Additio	$\frac{2}{3}$ ad $\frac{3}{4}$, *i. e.* $\frac{8}{12}$ ad $\frac{9}{12}$ sum. $\frac{17}{12}$	
Subductio	$\frac{2}{3}$ a $\frac{3}{4}$, *i. e.* $\frac{8}{12}$ ex $\frac{9}{12}$ resid. $\frac{1}{12}$	
Additio	3 ad $\frac{5}{8}$, *i. e.* $\frac{24}{8}$ ad $\frac{5}{8}$ sum. $\frac{29}{8}$	
Subductio	$\frac{5}{8}$ ex 3 *i. e.* $\frac{24}{8}$ resid. $\frac{19}{8}$	

Primo, Dicendum est, cur fractiones, antequam operemur, ad idem nomen reducamus: atque id quidem propterea fit, quod numeri res heterogeneas numerantes

Digitized by Google

in unum colligi, aut ab invicem subduci nequeant. *E. g.* Si velim addere tres denarios duobus solidis, summa non erit 5 sol. aut 5 den. neque enim illa prius haberi potest quàm res numeratas ad idem genus reducam, adhibendo loco duorum solidorum 24 denarios, quibus si addam 3 den. oritur aggregatum 27 den. pari ratione 2 partes tertias et 3 quartas una colligens, non scribo 5 partes, tertias aut quartas; sed earum loco usurpo 8 duodecimas et 9 duodecimas, quarum summa est 17 duodecimæ.

Secundo, Ostendam quod fractiones post reductionem idem valeant ac prius, *E. g.* quod $\frac{2}{3}$ æquentur $\frac{8}{12}$: siquidem uterque nominator et numerator per eundem numerum (*v. g.* 4) multiplicantur; omnis autem fractio exprimit rationem numeratoris, seu dividendi, ad nominatorem, seu divisorem; proinde dummodo ratio illa eadem manet, fractio eundem retinet valorem; sed ducto utroque rationis termino in unum eundemque numerum, certum est rationem non mutari: *e. g.* si dimidium rei cujusvis sit dimidii alterius rei duplum, erit et totum illud totius hujus duplum; quod quidem tam liquidò patet, ut demonstratione non indigeat.

Tertio, Integer ad fractionem reductus non mutat valorem: nam si 2 numerorum rectangulum per unum eorundem dividatur, quotiens erit alter; sed in reductione integri ad fractum is in nominatorem datum ducitur, et per eundem dividitur: igitur quotiens, *h. e.* fractio valet integrum primo datum.

N. B. Utile nonnunquam erit, fractionem ad datum nomen reducere; *e. g.* $\frac{2}{5}$ ad alteram, cujus nominator sit 9: quod quidem fit per regulam trium (de qua vide par. 3. cap. 1.) inveniendo numerum, ad quem nominator datus ita se habeat ac fractionis datæ nominator ad ejusdem numeratorem; is erit numerator fracti cujus datum est nomen, valor autem idem qui prioris; quippe inter fractionis terminos eadem est utrobique ratio.

Digitized by Google

CAP. III.

DE MULTIPLICATIONE FRACTIONUM.

1. Si ducenda sit fractio in fractionem, datarum fractionum numeratores in se invicem ducti, dabunt numeratorem producti; dati item nominatores procreabunt ejusdem nominatorem.

2. Si multiplicanda sit fractio per integrum, ducatur integer datus in numeratorem fractionis, eodem manente nominatore.

3. Si in factore alterutro, vel utroque occurrant integri, aut fractiones heterogeneæ, ei claritatis causâ unà colligi poterunt.

EXEMPLA MULTIPLICATIONIS.

Multiplic.	$\frac{2}{3}$ per $\frac{4}{8}$ pro. $\frac{10}{24}$	$\frac{4}{7}$ per 2 prod. $\frac{8}{7}$
Multiplic.	2 & $\frac{4}{5}$ per $\frac{1}{2}$ & $\frac{2}{3}$ *i. e.* $\frac{13}{5}$ per $\frac{7}{6}$	

Manifestum est quotientem eadem proportione augeri, qua dividendum: *E. g.* si 2 continetur ter in 6, continebitur bis ter in bis 6; liquet insuper eundem eadem proportione minui, qua crescit divisor. *E. g.* si numerus 3 continetur quater in 12, continebitur bis 3 duntaxat bis in 12: igitur cum ut multiplicem $\frac{2}{3}$ per $\frac{5}{8}$, augenda sit fractio $\frac{2}{3}$ ratione quintupla, quoniam per 5, et minuenda ratione octupla, quoniam non simpliciter per 5, sed solummodo ejus partem octavam multiplicatur; duco dividendum 2 in 5, et divisorem 3 in 8.

2. Quod ad regulam secundam, constat bis 4 res quasvis æquari 8 rebus ejusdem denominationis, quæcunque demum sit illa.

Digitized by Google

CAP. VI.

DE DIVISIONE FRACTIONUM.

1. Fractio per integrum dividitur, ducendo integrum datum in nominatorem fractionis datæ.

2. Si fractio per fractionem dividenda sit, numerator divisoris ductus in nominatorem dividendi dabit nominatorem quotientis, et ejusdem nominator ductus in numeratorem dividendi dabit numeratorem quotientis.

Quotiescunque admiscentur integri aut fractiones diversi nominis, facilius operabere si membra utriusque, tum dividendi tum divisoris, in binas summas colligantur.

EXEMPLA DIVISIONIS.

Div.	$\frac{3}{4}$ per 2 quot. $\frac{3}{8}$
Div. $\frac{4}{9}$ per $\frac{2}{5}$, quot. $\frac{20}{18}$	
Div. $2\frac{1}{3}$ $\frac{3}{2}$ per $3\frac{2}{5}$, *i. e.* $\frac{23}{66}$ per $\frac{17}{5}$	

1°. Quantum ad primam regulam, ex capite præcedenti constat, fractionem eadem proportione minui seu dividi, qua multiplicatur nominator.

2°. Postquam dividens fractionem unam per aliam, *e. g.* $\frac{4}{9}$ per $\frac{2}{5}$, duxi nominatorem 9 in 2, fractio $\frac{4}{18}$ dicit tantum quoties 2 continetur in dividendo; illius vero quintuplum indicabit quoties pars quinta numeri 2 ibidem continetur; quapropter quotientem primum $\frac{4}{18}$ duco in 5, inde fit $\frac{20}{18}$.

N. B. Si fractiones datæ sunt homogeneæ, brevius est et concinnius dividere numeratorem dividendi per numeratorem divisoris, quotiescunque illum hic metitur.

Digitized by Google

Sic divisis $\frac{6}{8}$ per $\frac{3}{8}$ quotiens erit 2, quæcunque enim numerantur 6 bis continent 3.

2. Si extrahenda sit radix e fractione data, radix nominatoris radici numeratoris subscripta constituet fractionem quæ erit radix quæsitæ. *E. g.* $\frac{2}{3}$ est radix quadrata fractionis $\frac{4}{9}$, et cubica fractionis $\frac{8}{27}$; nam ex iis quæ de multiplicatione diximus patet, $\frac{2}{3}$ in $\frac{2}{3}$ producere $\frac{4}{9}$ et $\frac{2}{3}$ in $\frac{4}{9}$ dare $\frac{8}{27}$.

CAP. VII.

DE REDUCTIONE FRACTIONUM AD MINIMOS TERMINOS.

1. QUONIAM fractionum quæ ex minimis terminis constant valor clarius agnoscitur, utile est fractionis terminos, quoties id fieri potest, per communem aliquam mensuram dividere. Quanto autem major fuerit communis iste divisor, tanto minores erunt quotientes seu termini fractionis datæ æqualis. Oportet itaque, datis duobus numeris, intelligere methodum inveniendi maximam eorum communem mensuram, *i. e.* divisorem maximum qui datos dividat absque residuo; qui est ut sequitur.

2. Divide majorem e datis per minorem, et divisorem per divisionis residuum, et si quod denuo supersit residuum, per illud residuum prius, *i. e.* ultimum divisorem dividas; atque ita porro, donec veneris ad divisorem qui dividendum suum exhauriat sive metiatur; is est maxima datorum communis mensura.

E. g. Proponantur 9 et 15. Divido 15 per 9, restant 6. Divido 9 per 6, restant 3: porro divisis 6 per 3, restat nihil. Ergo 3 est maxima communis mensura datorum numerorum 9 et 15: quod sic ostendo.

(*a*) 3 metitur 6, at (*b*) 6 metitur 9 demptis 3; igitur

(*a*) per const. (*b*) per const.

Digitized by Google

3 metitur 9 demptis 3; sed 3 metitur seipsum, metitur ergo integrum 9: atqui (*c*) 9 metitur 15 demptis 6, ergo 3 metitur 15 demptis 6, metitur vero 6; igitur metitur integrum numerum 15. Hinc patet 3 esse propositorum 9 et 15 communem mensuram: superest ut ostendam eandem esse maximam. Si negas, esto alia quæpiam major, puta 5; jam quoniam (*e*) 5 metitur 9, (*d*) 9 vero metitur 15 demptis 6, liquet 5 metiri 15 demptis 6: sed et integrum 15 (ex hypothesi) metitur, igitur metitur 6; 6 autem metitur 9 demptis 3, ergo 5 metitur 9 demptis 3. Quoniam igitur 5 metitur et integrum 9, et 9 demptis 3, metietur ipsum 3, *h. e.* (*f*) numerum minorem; quod est absurdum.

Inventa maxima communi mensura, patet fractionem $\frac{8}{15}$ deprimi posse ad hanc $\frac{3}{5}$, quam priori æqualem esse sic ostendo. Omnis fractio denotat quotientem numeratoris divisi per nominatorem; in divisione autem, quotiens dicit rationem dividendi ad divisorem, dum igitur ratio eadem manet, erit et quotiens seu fractio eadem. Porro rationem non mutari, terminis ejus pariter divisis, liquido constat; *e. g.* si res quælibet sit alterius rei dupla, vel tripla, erit et dimidium illius, dimidii hujus, duplum vel triplum, &c.

Qui fractiones per integros dividere et multiplicare novit, is in fractionibus (ut vocant) fractionum ad simplices reducendis nullam difficultatem experietur. Nam *v. g.* hæc fractio fractionis $\frac{3}{4}$ de $\frac{2}{3}$ ecquid aliud est quàm pars quarta fractionis $\frac{2}{3}$ triplicata, sive $\frac{2}{12}$ ducta in integram 3? Similiter, ductis in invicem tam numeratoribus quam nominatoribus, fractio fractionis fractionis, &c. ad integrum reducitur. Hæc cum tam clara sint et per se manifesta, mirum profecto per quantas ambages, quàm operosam theorematum, citationum, et specierum supellectilem a nonnullis demonstrantur, dicam, an obscurantur?

(*c*) per const. (*d*) per const. (*e*) per hyp. (*f*) per hyp.

Digitized by Google

ARITHMETICÆ

PARS TERTIA.

CAP. I.

DE REGULA PROPORTIONIS.

Regula *proportionalis* dicitur, qua, datis tribus numeris, invenitur quartus proportionalis. Illius quidem usus frequens est et eximius: unde nuncupatur *regula aurea*. Dicitur etiam *regula trium*, ob 3 terminos datos. Porro quartum directe proportionalem invenies, multiplicando terminum secundum per tertium, et productum per primum dividendo: *E. g.* si ut 2 ad 6, ita se habeat 4 ad quæsitum, duc 4 in 6, et productum 24 divide per 2, quotiens 12 erit quartus proportionalis quæsitus. Quod sic demonstro.

In quatuor proportionalibus, productum extremorum æquatur producto terminorum intermediorum. Nam propterea quod numeri sint proportionales, *h. e.* eandem habeant inter se rationem, ratio vero per divisionem cognoscatur, diviso termino secundo per primum, et quarto per tertium, idem proveniet quotiens; qui (ex natura divisionis) ductus in terminum primum, producet secundum, et in tertium, producet quartum. Jam, si ducamus terminum primum in quartum, vel (quod idem est) in tertium et quotientem continue, et terminum tertium in secundum, vel (quod idem est) in primum et quotientem continue, patet producta fore æqualia, nam iidem sunt utrobique factores. Sed ex natura multiplicationis et divisionis constat, diviso producto per

Digitized by Google

unum e factoribus, quotientem esse alterum. Igitur, si dividam productum duorum terminorum intermediorum (6 et 4) per primum (2), quotiens (12) exhibebit quartum proportionalem quæsitum.

Quæstio 1. Viator tribus horis conficit quindecim milliaria; quot conficiet novem horarum spatio? *Resp.* 45. Patet enim ex quæstione, ut 3 ad 15, ita 9 esse ad quæsitum: *i. e.* 3 : 15 :: 9 : ergo 135, productum ex 9 in 15, divisum per 3, dabit quæsitum, *viz.* 45.

Quæst. 2. Si 2 operarii 4 diebus merentur 2*s.* 5 quantam mercedem merebuntur 7 diebus? *h. e.* ut 2 in 4 ad 2, ita 5 in 7 ad quæsitum; sive 8 : 2 :: 35? Unde invenitur quæsita merces, *viz.* 8*s.* 6*d.*

Quæst. 3. Tres mercatores, inita societate, lucrifaciunt 100*l.* expendebat autem primus 5*l.* secundus 8*l.* tertius 10*l.* Quæritur quantum lucri singulis seorsim contigit? summa impensarum est 23*l.* Dic itaque, ut 23 ad 5, ita 100 ad quæsitum: numerus proveniens indicabit quantum primo de communi lucro debetur; æquum nempe est, ut quam proportionem habet cujusque impensa ad summam impensarum, eandem habeat ipsius lucrum ad summam lucrorum. Porro ad eundem modum dicendo 23 : 8 :: 100? et 23 : 10 :: 100? cæterorum lucra innotescent.

Proportio composita inversa in simplices facillime resolvitur. *V. g.* 2 homines expendunt 5 lib., 6 diebus : 30 lib. quot diebus expendent 8 homines? Dic primo 2 : 5 :: 8 : ? inveniens 20; dic igitur denuo 20 : 6 : 30 : ? et habebis quæsitum. Qua vero ratione terminus quæsitus simul et semel per regulam satis intricatam innotescat, explicare superfluum duco.

Quæst. 4. Quatuor fistulæ implent cisternam 12 horis; quot horis implebitur illa, ab 8 ejusdem magnitudinis? Dicendum 8 : 4 :: 12? Proinde 4 in 12, *h. e.* 48, divisa per 8, exhibent quæsitum, *viz.* 6. Neque in hoc casu, ubi invertitur proportio, ulla est nova diffi-

Digitized by Google

cultas; nam terminis rite dispositis, semper habebimus bina æquaalia rectangula, quorum unius notum est utrumque latus, alterum vero conflatur ex noto termino in ignotum ducto: quare dividendo productum illud prius per notum latus, seu factorem hujus, proveniet terminus ignotus. Quo autem ordine disponendi sint termini, ex ipsa quæstione palam fiet.

CAP. II.

DE ALLIGATIONE.

Regula *alligationis* simplicis dicitur, qua, propositis duabus rebus diversi pretii aut ponderis, &c. invenitur tertium quoddam genus, ex datis ita compositum, ut illius pretium vel pondus, &c. æquetur dato cuidam pretio vel ponderi, &c. inter proposita intermedio. *E. g.* Pollex cubicus auri pendit uncias (18), pollex cubicus argenti uncias (12). Quæritur pollex cubicus metalli cujusdam ex utroque mixti, qui pendat 16 uncias; in quo problemate, pondus intermedium 16 superat argenti pondus per 4, et superatur ab auri pondere per 2. Jam, si capiamus $\frac{2}{6}$ cubi argentei, et $\frac{4}{6}$ cubi aurei, patet eas una conflatas dare pollicem cubicum; quippe $\frac{2}{6}$ et $\frac{4}{6}$ æquantur unitati. Quin patet etiam metalli hujusce mixti pondus æquari dato intermedio 16; nam argenti, quod levius est per 4, accepimus 2 partes; igitur defectus est 2 in 4; auri vero, quod gravius est per 2, accepimus 4 partes: adeoque excessus est 4 in 2, *i. e.* æqualis defectui; qui proinde se mutuo tollunt.

Hinc oritur regula pro alligatione rerum duarum. Fractio quæ nominatur a summa differentiarum, et numeratur a defectu minoris infra medium, indicat quantitatem majoris sumendam; et vicissim quæ eundem habens nominatorem, numeratur ab excessu majoris supra medium, indicat quantitatem minoris sumendam.

Digitized by Google

Quæst. Sunt duo genera argenti, uncia purioris valet 4, vilioris 4, quæruntur 3 unciæ argenti, quæ valeant singulæ 5? Resol. constat ex regula, si accipiam $\frac{2}{3}$ unciæ vilioris, et $\frac{1}{3}$ unciæ purioris argenti, haberi unam unciam mixti quæsiti; hæc triplicata solvit quæstionem.

Quod si res alligandæ sint plures duabus, dicitur alligatio composita. *E. g.* sunt quinque vini genera, vis massici est 1, chii 3, falerni 5, cæcubi 7, corcyræ 9: volo mixtum cujus vis sit 4. Mixti æqualiter ex chio et massico, vis erit 2: nimirum dimidium summæ datarum 1 et 3, uti per se patet. Similiter, mixti æqualiter ex falerno cæcubo et corcyræo, vis erit 7, *i. e.* $\frac{1}{2}$ numeri 21, seu summæ virium misturam hancce componentium. 2 et 7 alligo cum vi intermedia data, *viz.* 4, defectus est 2, excessus 3, summa differentiarum 5; igitur sumendæ sunt $\frac{3}{5}$ misturæ prioris, $\frac{2}{5}$ posterioris; porro divisis $\frac{3}{5}$ per 2, quotiens indicat quantum singulorum, chii et massici, accipiendum sit. Similiter, $\frac{2}{5}$ divisæ per 3 dicent quantum falerni, &c. mixturæ inesse debet. Proinde $\frac{3}{10}$ massici, $\frac{3}{10}$ chii, $\frac{2}{15}$ falerni, $\frac{2}{15}$ cæcubi, $\frac{2}{15}$ corcyræi dabunt quæsitum.

Hinc cernimus, quomodo alligatio composita ad simplicem reducatur. Nimirum pondera, pretia, magnitudines, aut quæcunque demum sunt alliganda, in binas colligantur summas, quæ dividendæ sunt, utraque, per numerum terminorum qui ipsam constituunt: quotientes juxta regulam alligationis simplicis alligentur cum termino intermedio: quæ proveniunt fractiones, divisæ per numerum rerum summam ad quam spectant ingredientium, indigitabunt quantitatem ex singulis capiendam. Demonstratio patet ex dictis.

N. B. In alligatione plurium rerum quæstio quævis innumeras admittit solutiones, idque ob duplicem rationem: nam primo termini deficientes cum excedentibus diversimodè colligi possunt; unde varii prodibunt quotientes, cum dato termino intermedio alligandi. Cavendum tamen est ne dicti quotientes sint simul majores, aut

Digitized by Google

simul minores medio; quod si eveniat, patet quæsitum esse impossibile. Secundo, unum eundemque terminum licet sæpius repetere; unde illius portio augebitur, reliquorum vero portiones minuentur.

Libet in studiosorum gratiam hic exhibere solutionem celebris illius problematis, ad Archimedem ab Hierone propositi.

Quæst. Ex conflatis auro et argento fit corona: quæritur quantum ei insit auri, quantum argenti? coronam interim violari non sinit tyrannus. Respon. Parentur binæ massæ, una auri, altera argenti, quarum utraque sit ejusdem ponderis ac corona. Quibus paratis, patet problema, alia forma, sic proponi posse: datis *v. g.* libra auri, et libra argenti, invenire libram metalli ex utroque compositi, quæ sit datæ intermediæ molis: igitur inquirendæ sunt massarum et coronæ magnitudines. Quoniam vero coronæ soliditas geometrice determinari nequeat, opus est stratagemate. Singulæ ergo vasi aqua pleno seorsim immergantur; mensuretur autem quantitas aquæ ad cujusque immersionem profluentis, quam immersæ moli magnitudine æqualem esse constat; immerso utique auro, aqua exundans sit 5, argento 9, corona 6. Huc igitur redit quæstio; datis libra auri cujus magnitudo est 5, et libra argenti cujus magnitudo est 9, quæritur quantum ex singulis capere oporteat, ut habeamus libram metalli cujus magnitudo sit 6: proinde alligatis 9 et 5 cum magnitudine intermedia 6, innotescet quantitas auri, *viz.* $\frac{3}{4}$ lib. et $\frac{1}{4}$ lib. quantitas argenti, coronæ immisti.

Hinc patet, quàm non difficile sit problema, ob cujus solutionem notum illud ἕυρηκα ingeminavit olim Archimedes.

Digitized by Google

CAP. III.

DE PROGRESSIONE ARITHMETICA ET GEOMETRICA, ET DE LOGARITHMIS.

PROGRESSIO *Arithmetica* dicitur series numerorum, eadem communi differentia crescentium vel decrescentium. *E.g.* In hac serie 1. 4. 7. 10. 13. 16. 19. 22. 25, 3 est communis excessus, quo terminus secundus excedit primum, tertius secundum, quartus tertium, et sic deinceps: et in hac altera decrescentium serie, 15. 13. 11. 9. 7. 5. 3. 1, 2 est communis defectus, quo terminus quilibet a præcedenti deficit.

Jam ex ipso serierum harumce intuitu, et quam præmisimus definitione, manifestum est, unumquemque terminum continere minorem extremum, simul ac communem differentiam, multiplicatam per numerum locorum quibus ab eodem distat. *E.g.* In prima serie terminus quintus 13 constat ex minore extremo 1, et communi differentia 3, ducta in 4, *i. e.* numerum locorum quibus a minimo extremo distat. Hinc dato minore extremo, et communi differentia, terminus quivis, *e. g.* a minimo undecimus exclusive, facile inveniri potest, ducendo differentiam 3 in 11, et productum 33 minori extremo 1 addendo. Idem invenitur, datis majore extremo, differentia communi, et numero locorum quibus terminus quæsitus a maximo sejungitur, ducendo communem differentiam in numerum locorum datum, et productum e majore extremo auferendo. Patet etiam qua ratione, datis termino quolibet, ejusdem indice, et communi differentia, terminus primus assignetur; et quomodo ex datis termino quovis, illius indice, et minore extremo, communis differentia, itemque ex datis termino, differentia, et minore extremo, termini index eruatur. Quin et illud etiam patet, *viz.* dimidium summæ duorum terminorum æquari medio proportionali arith-

Digitized by Google

metico. *E. g.* 7 et 13 faciunt 20, cujus dimidium 10 est terminus inter datos medius *(vide seriem primam)*. Hæc et alia bene multa theoremata ac problemata, eorumque solutiones, ex ipsa progressionis arithmeticæ natura facile quisquam deduxerit, præsertim si lògistica speciosa utatur. Quapropter ea exercitii causa tyronibus relinquo.

Progressio geometrica vocatur series numerorum, eadem continua ratione crescentium vel decrescentium. *E. g.* 3. 6. 12. 24. 48. 96. sunt in progressione geometrica, cujus ratio communis est dupla, nimirum terminus quisque duplus est præcedentis. Similiter numeri hujus decrescentis seriei, 81. 27. 9. 3, 1. progrediuntur ratione subtripla, *i. e.* terminus quilibet præcedentis subtriplus est sive $\frac{1}{3}$.

Ubi observandum est, terminum quemvis conflari ex potestate communis rationis, ipsi cognomine, in terminum primum ducta. *E. g.* In serie prima, 48, terminus exclusive quartus, producitur ex 16, potestate quarta numeri 2 (*i. e.* quæ generatur ex 2 ter in seipsum ducto, siquidem ipsa radix dicitur potestas prima) per terminum primum 3 multiplicata. Quamobrem ea quæ de progressione arithmetica diximus etiam hic locum habent, si pro additione et subductione multiplicationem et divisionem, pro multiplicatione et divisione involutionem et evolutionem, sive radicum * extractionem adhibeamus. *E. g.* Quemadmodum in progressione arithmetica summa extremorum bisecta dat medium arithmeticum, ita in progressione geometrica medius proportionalis est radix producti extremorum. Adeoque theoremata et problemata quòd spectat, iis, cum illa ex nuda serierum contemplatione facillime eruantur, ulterius deducendis non immorabimur.

At vero unum est progressionis geometricæ theo-

* N. B. Quomodo potestatum quarumvis radices extrahantur, lector diligens, juxta methodum quam secuti sumus de quadrato et cubo eorumque radicibus agentes, investigare poterit.

Digitized by Google

rema, ex quo olim derivata fuit, et etiamnum dependet nobilis Logarithmorum scientia; quodque adeo hic visum est explicare.

In progressione geometrica cujus principium est unitas, rectangulum duorum quorumlibet terminorum æquatur termino ejusdem progressionis, qui pro indice habet summam indicum factorum. *E. g.* Si sequentis seriei $\left\{\begin{matrix}1. & 2. & 4. & 8. & 16. & 32. & 64.\\ 0. & 1. & 2. & 3. & 4. & 5. & 6.\end{matrix}\right\}$ ducamus terminum secundum 2 in quartum 8, productum 16 est terminus quintus, cujus index 4 æquatur indicibus secundi et quarti una collectis.

Ratio manifesta est; nam quælibet potestas, in aliam quamcunque ejusdem radicis ducta, procreat tertiam, cujus dimensiones tot sunt, quot fuere in utraque potestate generante. Sed in progressione geometrica, cujus terminus primus sit unitas, patet reliquos omnes subsequentes esse potestates ex communi ratione genitas, quarum singulæ tot habeant dimensiones, quot locis ab unitate distant.

Igitur si infinitæ progressioni geometricæ adscriberetur indicum series itidem infinita, ad obtinendum duorum terminorum rectangulum haud necesse foret unum per alterum multiplicare; oporteret solummodo, indicibus una collectis, quærere indicem qui aggregato æquetur; is sibi adscriptum ostenderet rectangulum quæsitum. Similiter, si dividendus sit unus terminus per alium, differentia indicum, si extrahenda sit radix quadrata aut cubica, $\frac{1}{2}$ aut $\frac{1}{3}$ indicis, quæsitum quotum, vel radicem, indigitaret.

Hinc patet, difficiliores arithmeticæ operationes insigni compendio exerceri posse, si conderentur tabulæ, in quibus numeri naturali ordine collocati habeant singuli indicem a latere respondentem: tunc quippe multiplicatio sola additione; divisio, subductione; extractio radicum, bisectione vel trisectione indicum, peragerentur. Sed indices illos, sive logarithmos, numeris accom-

Digitized by Google

modare, *hoc opus, hic labor est*; in quo exantlando plurimi desudarunt mathematici.

Primi quidem tabularum conditores hac fere methodo usi sunt. Numeris 1. 10. 100. 1000, &c. in progressione decupla existentibus, logarithmos assignarunt 0.0000000. 1.0000000. 2.0000000. 3.0000000, &c. Deinde ut numeri alicujus, *v. g.* 4, inter 1 et 10 intermedii, logarithmum invenirent, adjectis utrique septem cyfris, inter 1.0000000, et 10.0000000, medium proportionalem quæsiere; qui si minor esset quam 4, inter ipsum et 10.0000000, si vero major, inter eum et 1.0000000, medius proportionalis indagandus erat: porro inter hunc (si minor esset quam 4) et proxime majorem, sin major, et proxime minorem, denuo quærebant medium proportionalem; et sic deinceps, usque dum ventum fuisset ad numerum, non nisi insensibili particula, puta $\frac{1}{10000000}$, a proposito 4 differentem. Hujus autem logarithmus obtinebatur, inveniendo medium arithmeticum inter logarithmos numerorum 1 et 10, et alium inter ipsum et logarithmum denarii, &c. Jam si bipartiatur logarithmus numeri 4, habebitur logarithmus binarii, idem duplicatus dat logarithmum numeri 16; et si logarithmo quaternionis addatur logarithmus binarii, summa erit logarithmus octonarii. Simili methodo, ex uno logarithmo numeri 4 alii innumeri inveniri possunt.

Ad eundem modum, cùm cæteris numeris inter unitatem et decadem intermediis aptati essent logarithmi, alios quamplurimos eorum summæ, differentiæ, &c. suppeditarunt. Sed de his satis; neque enim omnia quæ ad logarithmos spectant tradere statuimus: id duntaxat propositum fuit, eorum naturam, usum, et inventionem quadantenus exponere.

Digitized by Google

Digitized by Google

MISCELLANEA MATHEMATICA:

SIVE

COGITATA NONNULLA

DE

RADICIBUS SURDIS, DE ÆSTU AERIS, DE CONO ÆQUILATERO ET CYLINDRO EIDEM SPHÆRÆ CIRCUMSCRIPTIS, DE LUDO ALGEBRAICO; ET PARÆNETICA QUÆDAM AD STUDIUM MATHESEOS, PRÆSERTIM ALGEBRÆ.

AUTORE * * * * ART. BAC. TRIN. COL. DUB.

Digitized by Google

Digitized by Google

EGREGIO ADOLESCENTI

D. SAMUELI MOLYNEUX,

IN ACADEMIA DUBLINIENSI SOCIORUM COMMENSALI, FILIO VIRI CLARISSIMI GULIELMI MOLYNEUX, PAUCIS ABHINC ANNIS ACERBO TAM PATRIÆ QUAM REI LITERARIÆ FATO DENATI.

EGREGIE ADOLESCENS,

TANTA fuit patris tui, dum viveret, apud eruditos existimatio, ut me rem iis pergratam facturum arbitrer, si filium, sui acuminis ac solertiæ hæredem, ipsum reliquisse palam faciam. Fatendum quidem est, patruum tuum, virum doctrina juxta ac humanitate insigni, tale aliquid jam pridem * fecisse. Viderat nimirum vir clarissimus, eam esse tui necdum adolescentis indolem, ut te olim paterna pressurum vestigia verisimile judicaret. Cujus tanti viri auctoritas apud me usque eo valuit, ut deinceps magnam de te spem conceperim. Nunc autem, cùm ipse studiorum tuorum conscius, te saniori philosophiæ et mathesi operam strenuè navantem cernam; quum spinas quibus obsepta videtur mathesis, quæque alios quamplurimos ab ejus studio deterrere solent, te è contra ad alacrius pergendum stimulare; quum denique ad industriam illam et sciendi ardorem præclaram ingenii vim sentiam accedere; exundantem nequeo cohibere lætitiam quin in orbem literatum effluat, teque ex præcipuis (si modo Deus vitam largiatur et salutem) ineuntis

* Vide epistolam Thomæ Molyneux, M. D. ad episcopum Clogherensem, Philosoph. Transact. N°. 282.

Digitized by Google

sæculi ornamentis fore, certissimo sane augurio prænuntiem. Proinde, sequentibus quantuliscunque ad te delatis, ansam hancce tecum publice colloquendi arripere gestiebam; cum ut ipse proprio cedam affectui, tum ut tu expectatione de te coorta tanquam vinculo quodam, alioqui non ingrato, illi rerum pulcherrimarum studio devinciare.

Digitized by Google

DE RADICIBUS SURDIS.

Id mihi olim in mentem venit, ut putarem praxin algebraicam factum iri nonnihil faciliorem, si ablegato signo radicali, alia quæpiam excogitaretur potestatum imperfectarum radices computandi methodus, quæ ab usitata in reliquis operationum forma minus abhorreret. Nimirum quemadmodum in arithmetica longe facilius tractantur fractiones a vulgaribus ad decimales reductæ, quia tunc notæ cujusque loco nominatoris vicem obeunte, altera sui parte truncantur, similique forma ac integri descriptæ, eandemque cum iis seriem constituentes, iisdem itidem legibus subjiciuntur; sic si ex logistica etiam speciosa ablegaretur nota ista radicalis [$\sqrt{}$] quæ, ut nominator inter fractiones et integros, operationum diversitatem inter radices surdas ac rationales inducit, praxis proculdubio minus intricata evaderet.

Quidni itaque radices quascunque surdas, perinde ac rationales, per nudas duntaxat literas designemus, *v. g.* pro $\sqrt{b}$ substituto c vel d? Quippe surdis ad hunc modum designatis, nihil intererit inter eas ac potestatum perfectarum radices; additio, subductio, multiplicatio, &c. ad eundem modum utrobique peragentur. Sed objicere in promptu est, vel magis quam signum radicale, species hac ratione multiplicatas calculum divexare. Siquidem cum nulla sit affinitas seu connexio inter b et c, adeoque una ex altera agnosci nequeat, videtur illius radix aptius designari per $\sqrt{b}$, cujus statim ac cernitur innotescit significatio. Respondeo, huic malo mederi posse, si *v. g.* Græcum alphabetum ad designandas radices introducamus, scribendo β pro $\sqrt{b}$, δ pro $\sqrt{d}$, &c. Quo pacto non tam ipsæ literæ quam cha-

Digitized by Google

racteres variabuntur, et nota quævis substituta in tantum referet primitivam, ut scrupulo non sit locus.

Quantitatis ex aliarum multiplicatione aut divisione conflatæ radix designabitur per earundem radices similiter multiplicatas seu divisas. *E. g.* $\sqrt{bc} = \beta\kappa$, et $\sqrt{\frac{bdm}{e}} = \frac{\beta\delta\mu}{e}$

Si vero proponatur quantitas multinomia, seu constans ex pluribus membris (in quibus nulla sit quantitas ignota) signis + aut — inter se connexis; designetur horum aggregatum (quod et alias quidem sæpe fit) per unicam aliquam literam. *E. g.* fiat $a+b-c=g$, cujus radix est γ.

Quæris autem quid fiat ubi ignotæ quantitates notis connectantur; sit *v. g.* potestas imperfecta $f+x$: nam si utamur ϕ et ξ partium nempe potestatis radicibus, ex iis nequit determinari radix totius? Quidni igitur exæquemus potestatem datam imperfectam alteri cuidam perfectæ, viz. $f+x=ff+2f\xi+\xi\xi$, vel $fff+3ff\xi+3f\xi\xi+\xi\xi\xi$, &c.? Tunc enim erit $f+\xi=\sqrt[2]{f+x}$ vel $\sqrt[3]{f+x}$, &c.

Sed illud prætermissum est, qua ratione radicis genus dignoscatur; utrum scilicet sit quadratica, aut cubica, aut biquadratica. Num itaque quadraticis linquendi sunt characteres Græci, reliquisque deinceps alii itidem assignandi? An potius manente eodem charactere, puncto supra notato radicem quadratam, binis cubicam, tribus biquadraticam, atque ita porro indigitemus:

e. g. $\dot{a}$ significet radicem quadraticam quantitatis per a designatæ, $\ddot{a}$ radicem cubicam, $\dddot{a}$ biquadraticam, &c.? quo quidem modo fluxiones primæ, secundæ, tertiæ, &c. designantur. Seu denique id satis ducamus quod per retrogressum innotescat radicis denominatio? Quippe inter operandum nihil interest cujus generis sit radix aliqua, quandoquidem omnes absque signo radicali notatæ, iisdem subsint legibus, et ad eundem modum tractentur.

Digitized by Google

Cruda quidem sunt hæc et imperfecta, quàmque nullius sint pretii ut a me proponuntur, sat cerno. Tu autem, *clarissime adolescens*, cui nec otium deest nec ingenium, ex hocce sterquilinio boni aliquid fortasse extraxeris. Cæterum haud scio, an ea quæ disseruimus tyronibus (reliquos ista flocci facturos scio) quadantenus usui esse possint, eorumque ope disquisitionis analyticæ filum nonnunquam enodetur eliminatis, cum ipso signo radicali, operationibus quæ illud comitantur heterogeneis. Utut id sit, mihi visus sum iis ex parte adhibitis, vulgarem *de surdis* doctrinam, brevius et clarius quàm ab ullo quod sciam factum est, posse explicare. Proinde rem ipsam aggredior.

Radices surdæ dicuntur esse commensurabiles, cum earum ad invicem ratio per numeros rationales exprimi possit; quod si fieri nequeat, incommensurabiles appellantur. Porro si propositis duabus radicibus surdis, quærere oporteat, utrum sint commensurabiles necne; inveniatur exponens rationis existentis inter potestates quibus præfigitur signum radicale: hic si sit potestas perfecta, habens eundem indicem ac radices propositæ, erunt illæ commensurabiles: sin minus, incommensurabiles censendæ sunt. *E.g.* Sint radices propositæ $\sqrt[2]{24}$ et $\sqrt[2]{54}$. $\frac{4}{9}$ fractio quadrata exponit rationem potestatis unius 24 ad alteram 54; adeoque radices sunt commensurabiles, viz. $\sqrt[3]{24} : \sqrt[3]{54} :: 2 : 3$. Proponatur denuo $\sqrt[3]{320}$ et $\sqrt[3]{135}$; ratio numeri 320 ad 135 exponitur per $\frac{64}{27}$, cubum nempe perfectum, cujus radix $\frac{4}{3}$ indicat rationem radicis unius $\sqrt[3]{320}$ ad reliquam $\sqrt[3]{125}$. Demonstratio manifesta est, siquidem norunt omnes radices quadratas esse in ratione subduplicata, cubicas in subtriplicata, biquadraticas in subquadruplicata, et sic deinceps potestatum respectivarum.

Quod si radices sint heterogeneæ quarum exploranda est ratio, ad idem genus reducantur, involvendo numeros signo radicali affixos, singulos juxta indicem radicis alterius; quibus sic involutis præfigenda erit nota radi-

Digitized by Google

calis cum indice ex indicibus primo datis in se mutuo ductis conflato. *E. g.* Sint radices surdæ heterogeneæ $\sqrt[2]{5}$ et $\sqrt[3]{11}$. Cubatis 5, et quadratis 11, proveniunt 125 et 121: his præfixum signum radicale cum indice 6 præstat radices homogeneas $\sqrt[6]{125}$ et $\sqrt[6]{121}$. Hujus operationis ut cernatur ratio, designemus $\sqrt[2]{5}$ per speciem quamvis simplicem, puta b, et $\sqrt[3]{11}$ per c; eritque $\sqrt[2]{bb} = \sqrt[2]{5}$, et $\sqrt[3]{ccc} = \sqrt[3]{11}$, et $\sqrt[6]{bbbbbb} = \sqrt[6]{125}$, et $\sqrt[6]{cccccc} = \sqrt[6]{121}$. Ubi porro patet quod $\sqrt[6]{bbbbbb} = \sqrt[2]{bb}$ et $\sqrt[6]{cccccc} = \sqrt[3]{ccc}$.

Additionem quod attinet radicum surdarum, illa, si sint commensurabiles, fit præfigendo summam terminorum rationis signo radicali, cui suffigendus est communis divisor, cujus ope dictæ rationis termini innotuerunt. *E. g.* $\sqrt[2]{24} + \sqrt[2]{54} = 5\sqrt[2]{6}$. Nam ex antedictis, et iis quæ sequuntur de multiplicatione, $\sqrt[2]{24} = 2\sqrt[2]{6}$, et $\sqrt[2]{54} = 3\sqrt[2]{6}$. Ad eundem modum fit subductio, nisi quod differentia terminorum exponentis signo radicali præfigatur. Si addendæ sunt aut subducendæ radices surdæ incommensurabiles, mediantibus signis + aut — connectantur. *E. g.* $\sqrt{6} + \sqrt{3}$ et $\sqrt{6} - \sqrt{3}$ sunt summa et differentia radicum numerorum 6 et 3; quo quidem modo surdis adduntur aut subducuntur etiam numeri rationales.

Si radix surda per aliam homogeneam multiplicanda sit; rectangulo potestatum præponatur nota radicalis, simulque index communis. *E. g.* $\sqrt[2]{3} \times \sqrt[2]{7} = \sqrt[2]{21}$ et $\sqrt[3]{g} \times \sqrt[3]{x} = \sqrt[3]{gx}$. Ad cujus praxeos demonstrationem, designentur radices numerorum 3 et 7 per b et d, ut sit $bb = 3$ et $dd = 7$, et liquido constabit, quod $\sqrt[2]{bb\,dd} = bd$ i. e. radix quadrata producti æquatur producto radicum quad. Idem ad eundem modum ostendi potest de aliis quibuscunque radicibus, cubicis, biquadraticis, &c. Radices heterogeneæ, priusquam multiplicentur, ad homogeneas reducendæ. Si numerus rationalis in surdum ducendus sit, elevetur ille ad potestatem datæ imperfectæ cognominem, cui præfigatur nota radicalis, una-

Digitized by Google

que ejusdem potestatis index. Cætera ut prius. *E. g.* $5 \times \sqrt[3]{4} = \sqrt[3]{125} \times \sqrt[3]{4} = \sqrt[3]{500}$. Vel brevius sic, $5\sqrt[3]{4}$; et generaliter $b \times \sqrt[a]{c} = \sqrt[a]{b}\sqrt[a]{c}$, vel $b\sqrt[a]{c}$.

Divisionem quod attinet, quoties dividendus et divisor sunt ambo radices surdæ, ablata (si qua sit) heterogeneitate, nota radicalis cum proprio indice quotienti potestatum præfixa, quotum quæsitum exhibebit. *E. g.* $\sqrt[2]{7} \div \sqrt[2]{3} = \sqrt[2]{\frac{7}{3}} = \sqrt[2]{2\frac{1}{3}}$. Si vero ex duobus, alteruter duntaxat numerus seu species signo radicali afficitur; reliquus, juxta indicem radicis datæ involutus, notæ radicali suffigatur: deinde ut prius. *E. g.* $\sqrt[3]{96} \div 4 = \sqrt[3]{96} \div \sqrt[3]{64}\sqrt[3]{\frac{96}{64}} = \sqrt[3]{\frac{3}{2}}$. Vel sine præparatione $\frac{\sqrt[3]{96}}{4}$. Et generaliter $\sqrt[a]{c} \div b = \sqrt[a]{\frac{c}{ba}}$ vel $\frac{\sqrt[a]{c}}{ba}$. Hæc, velut præcedentia, facillime demonstrantur.

DE ÆSTU AERIS.

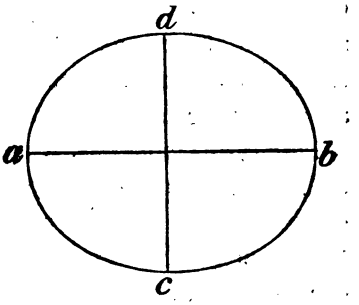
Non ita pridem incidi in librum cui titulus, *De Imperio Solis et Lunæ in Corpora humana*, authore viro cl. M.D. et S.R.S. Qui sane quantus sit, et quantulus sim ipse, non ignoro. Sed ut libere dicam quod sentio, sententiam ejus *De Æstu Aeris*, quam ibidem explicatam dat, utpote celeberrimi Newtoni principiis innixam, ambabus ulnis amplexus sum. Verumtamen haud scio, an author ingeniosus phænomenon quorundam isthuc pertinentium causas tam recte assecutus sit. Quàm vero justa sit dubitandi ratio, tu cujus perspectum habeo acumen, optime judicabis.

Tribuit vir cl. altiorem aeris circa æquinoctia tumorem figuræ sphæroidali terræ: differentiam insuper inter aeris intumescentiam, quæ a luna meridionali, et illam quæ a luna (ut ita loquar) antimeridionali in

Digitized by Google

sphæra obliqua excitatur, eidem causæ acceptam refert. Ego vero neutrius istorum phænomenôn explicationem ab oblata sphæroide petendam duco. Propterea quod, primo, quamvis sententia quæ massam aereo-terrestrem ea esse figura contendit, rationibus tam physicis quam mathematicis comprobetur, et nonnullis item phœnomenis pulchre respondeat; non tamen apud omnes usque adeo obtinet, ut nulli veteris, vel etiam oppositæ sententiæ fautores, iique non minimæ notæ viri, hodie reperiantur. Et sane memini, D. Chardellou astronomiæ peritissimum, abhinc plus minus sesquianno, mihi indicasse, sibi ex observationibus astronomicis axem terræ diametro æquatoris compertum esse longiorem: adeoque terram esse quidem sphæroidem, sed qualem vult Burnetius, ad polos assurgentem, prope æquatorem vero humiliorem. Attamen quod ad me attinet, mallem quidem viri clarissimi observationes potius in dubium vocare, quàm argumentis quæ terram esse oblatam demonstrant obviam ire. Nihilominus, quoniam sententia ista non omnibus æque arridet, illam tanquam principium ad phænomenon ullum explicandum adhiberi nollem, nisi res aliter commode explicari nequeat. Sed secundo, tantum abest quod supradictorum effectuum explicatio sphæroidalem terræ figuram necessario poscat, ut vix ullam inde lucis particulam mutuari videatur: id quod, appositis quæ in hanc rem scribit vir clarissimus, ostendere conabor. "Altius (inquit) solito se attollit aer circa duo æquinoctia, quoniam cum æquinoctialis linea illi globi terrestris circulo adversa respondeat qui diametrum habet maximam, utrumque sidus dum in illa versatur terræ est vicinius." *De Imp. Sol. et Lun.* p. 9. Jam vero, utrum vicinior iste luminarium situs par sit attollendo aeri in cumulum solito sensibiliter altiorem, merito ambigi potest. Etenim tantilla est differentia inter axem transversum et conjugatum ellipseos, cujus volutione gignitur sphærois terrestris, ut illa ad

Digitized by Google



sphæram quamproxime accedat. Verum ut accuratius rem prosequamur, designet *a c b d* sectionem per polos massæ aereo-terrestris, in qua sit *d c* axis, *a b* diameter æquatoris. Jam inito calculo, deprehendi vim lunæ attractricem in *b* vel *a* non esse $\frac{1}{4000}$ sui parte fortiorem quàm foret in *c* vel *d*, si illa polo alterutri directe immineret, et proinde differentiunculam istam effectui ulli sensibili edendo imparem omnino esse. Considerandum etiam, lunam ab æquatore nunquam tertia parte arcus *b d* distare, dictamque proinde quantulamcunque differentiam adhuc valde minuendam esse. Quod autem de luna diximus, id de sole, cum multis vicibus longius absit, adhuc magis constabit.

Verum quidem est, D. Mead alias insuper causas æstus prope æquinoctia altioris attulisse; viz. "agitationem fluidi sphæroidis in majori orbe se revolventis majorem, præterea vim centrifugam effectum habentem eo loci longe maximum." Quod ad primam, etsi illa prima fronte nonnihil præ se ferre visa sit, fatendum tamen est, me non omnino percipere, quomodo aliquid inde ad distinctam rei propositæ explicationem faciens colligi possit. Quod ad secundam, constat sane vim centrifugam prope æquatorem esse longe maximam, et propterea massam aereo-terrestrem figuram oblatæ sphæroidis induisse: quid vero aliud hinc sequatur non intelligo.

Verum etiamsi concedamus aerem, propter causas a clarissimo viro allatas, circa æquinoctia ad æquatorem supra modum tumefieri; non tamen inde apparet, quamobrem apud nos, qui tam procul ab æquatore degimus, tum temporis altius solito attollatur: quinimo contrarium sequi videtur. Sequenti pagina sic scribit D. Mead. "Ut finem tandem faciam, in iisdem parallelis ubi lunæ

Digitized by Google

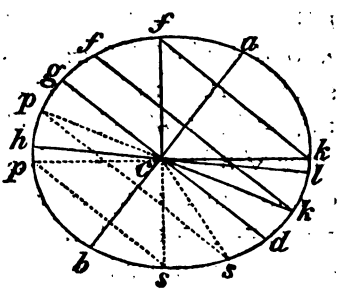
declinatio est, illum cœli polum versus qui altissimus insurgit, validissima est attractio, cum illa ad ejus loci meridianum verticem accedit, minima vero, ubi pervenit ad meridianum loci oppositi; quod contra contingit in parallelis his adversis. Causa est in sphæroide terræ ætherisque figura." Ego vero causam non esse in terræ et ambientis ætheris figura propterea puto, quod posita terra vel perfecte spherica, vel etiam oblonga, idem certe eveniret, uti infra patebit. Restat ut harum rerum explicationem ipse aggrediar, siquidem eo præsertim nomine suspecta mihi fuit ratio a sphæroidali terræ figura deducta, quod, nulla ipsius habita ratione, res tota clarissime simul ac facillime exponi posse videbatur.

Newtonus, Operis sui Physico-Mathematici, lib. iii. prop. 24. ubi æstuum marinorum phenomena explicat, hæc habet: "Pendet etiam effectus utriusque luminaris ex ipsius declinatione seu distantia ab æquatore. Nam si luminare in polo constitueretur, traheret illud singulas aquæ partes constanter, absque actionis intensione et remissione, adeoque nullam motus reciprocationem cieret. Igitur luminaria recedendo ab æquatore polum versus effectus suos gradatim amittent, et propterea minores ciebunt æstus in syzygiis solstitialibus quam in æquinoctialibus." Atqui non alia causa videtur quærenda ullius phænomeni æstus aerei, quâm quæ ad similem effectum in æstu marino excitandum sufficiat. Sed ut id quod à viro per totum orbem longe celeberrimo breviter adeoque subobscure traditum est, uberius exponam; sit in priore figura *a d c b* meridianus, et *a b* axis massæ aereo-terrestris; sol autem et luna in polo constitui concipiantur. Manifestum est, quamvis massæ aereæ partem, puta *d*, durante circumvolutione diurna, eandem semper distantiam à luminaribus tueri, adeoque vi ubique æquali in eorum corpora trahi. Proinde aer non uno tempore attollitur, alio deprimitur, sed per totum diem in eadem hæret altitudine. Verum

Digitized by Google

secundo, in eadem figura repræsentet *a c b d* æquatorem aut parallelum quemvis, luminaria interim in plano æquinoctiali existant; quo tempore manifestum est, tum ipsum æquatorem, tum singulos parallelos, ellipticam induere figuram. Manifestum etiam est, aerem qui nunc *a*, apicem axis transversi, obtinet, adeoque altissimus insurgit, post sex horas, *c*, extremum axis conjugati, ubi humillimus deprimetur, occupaturum, maximamque proinde motus reciprocationem cieri. Ut igitur rem omnem simul absolvam, gibbos sphæroidis æstuosæ triplici ratione locari concipiamus; vel in polis, vel in æquatore, vel in locis intermediis. In primo casu, esset planum rotationis diurnæ ad axem sphæroidis perpendiculare, adeoque circulus; unde nullus foret æstus: in secundo, esset ad eundem parallelum, adeoque ellipsis, inter cujus axes maxima sit differentia; unde maximi forent æstus: in tertio, quo magis ad situm perpendicularem accederet, eò circulo vicinius esset, adeoque minores forent æstus.

Reliquum est ut demonstrem, differentiam quæ est in sphæra obliqua inter æstum quemvis et subsequentem, ubi luna extra æquatorem vagatur, terrâ posita vel oblata, vel ad amussim sphærica, vel etiam oblonga, perinde causatum iri. Sit *a b* axis mundi, *g d* æquator, *k* locus quivis, *f k* loci parallelus, *h l* axis sphæroidis æstuosæ ob actionem, potissimum, lunæ utrinque tumentis. Luna autem prope *l* constituatur. Demonstrandum est *c k* altitudinum aeris, luna prope loci meridianum existente, majorem esse *c f*, aeris altitudine, ubi luna meridianum loci oppositi transierit. Ducatur *p s* parallelus priori ex adverso respondens, et producantur *c k*, *c f* ad *p* et *s*. Per constructionem arcus *p h* æqua-



Digitized by Google

lis est arcui $k\,l$; ergo arcus $f\,h$ major est arcu $k\,l$; ergo propter ellipsin recta $f\,s$ minor est recta $k\,p$, et $f\,c$ minor $k\,c$. Q. e. d.

DE CONO ÆQUILATERO ET CYLINDRO, EIDEM SPHÆRÆ CIRCUMSCRIPTIS.

LEMMA.

Latus trianguli æquilateri est ad diametrum inscripti circuli, ut $\sqrt{3}$ ad 1: et perpendicularis ex angulo quovis ad latus oppositum demissa, est ad eandem, ut 3 ad 2.

Hæc cuivis, algebram et geometriam utcunque callenti, facile constabunt.

PROBLEMA.

Invenire rationem quæ existit inter cylindrum et conum æquilaterum eidem sphæræ circumscriptos?

Ponamus diametrum et peripheriam basis cylindri esse singulas unitatem. Eruntque, per lemma, diameter basis coni ejusdemque peripheria singulæ $\sqrt{3}$. Proinde $1 \times \frac{1}{4} = \frac{1}{4} =$ bas. cylindri; et $\frac{1}{2} =$ summæ basium. Et $\sqrt{3} \times \frac{1}{4}\sqrt{3} = \frac{3}{4} =$ bas. coni, et superficies cylindri seu quadruplum baseos $= 1$. Et superficies simplex coni $= \frac{3}{2} = \frac{\sqrt{6}}{4} \times \sqrt{6}$. Nam $\sqrt{\frac{3}{2}}$ (*h. e.* media proportionalis inter $\sqrt{3}$ latus coni, et basis radium seu $\sqrt{\frac{3}{4}}$) est radius circuli æqualis superficiei conicæ. Et per præcedentia $1 + \frac{1}{2} = \frac{3}{2} =$ sup. tot. cylindri, et $\frac{3}{2} + \frac{3}{4} = \frac{9}{4} =$ sup. tot. coni. Porro per hypothesin et lemma, axis cylindri est 1, et coni $\frac{3}{2}$. Soliditas autem cylindri $= \frac{1}{4} \times 1 = \frac{1}{4}$, et soliditas coni $= \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$. Hinc, comparatis inter se homogeneis, eruitur sequens.

Digitized by Google

THEOREMA.

Inter conum æquilaterum et cylindrum eidem sphæræ circumscriptos eadem obtinet ratio sesquialtera, quoad superficies totas, superficies simplices, soliditates, altitudines, et bases.

Duobus abhinc annis theorema illud non sine admiratione aliqua inveni. Nec tamen propriam ingenii vim aut sagacitatem ullam, quippe in re tam facili, sed quod Tacquetus notissimus matheseos professor tantopere gloriatus sit de invento cui impar non sit tyro, id demum admiratus sum. Nempe is invenerat partem aliquam theorematis præfati, *viz.* quod "conus æquilaterus sit cylindri, eidem sphæræ circumscripti, soliditate et superficie tota sesquialter; quodque adeo continuata esset ratio" inter conum æquilaterum, cylindrum, et sphæram. Hæc est ipsa illa propositio, ad quam spectat schema, quod præfati authoris tractatus De Theorematis ex Archimede selectis, in ipsa fronte, una cum epigraphe inscriptum præfert. Quin etiam videas quæ dicat Jesuita in præfatione, in scholio ad prop. 32, et sub finem propositionis 44^{tæ} ejusdem tractatus: ubi theorema hocce tanquam illustre aliquod inventum, et Archimedæorum æmulum ostentat. Idem quod Tacquetus, etiam Cl. Wallisius in additionibus et emendationibus ad cap. lxxxi. algebræ suæ, à D. Caswello ope arithmetices infinitorum demonstratum, exhibet. Quod ipsum, quoad alteram ejus partem, facit D. Dechales in libro suo de indivisibilium methodo, prop. 20. Sed tam ipsa indivisibilium methodus, quam quæ in ea fundatur arithmetica infinitorum, à nonnullis minus Geometricæ censentur.

Integrum autem theorema à nemine, quod sciam, antehac demonstratum fuit. Attamen si verum est quod opinatur Tacquetus, "idcirco Archimedi inter alia

Digitized by Google

tam multa et præclara inventa, illud quo cylindrum inscriptæ sphæræ soliditate et superficie sesquialterum esse demonstrat, præ reliquis placuisse, quod corporum, et superficierum corpora ipsa continentium, eadem esset atque una rationalis proportio:" si, inquam, hoc in causa fuit, cur iscylindrum sphæræ circumscriptum tumulo insculptum voluit; quid tandem faceret senex ille Siculus, si unam eandemque rationalem proportionem bina corpora quintuplici respectu intercedere deprehendisset? Illud tamen quàm facile ex ejus inventis profluat, modo vidimus.

Simili fere methodo ac nos illud, omnia Tacqueti theoremata Archimedæis subjuncta, adde et centum istiusmodi alia si cui operæ pretium videbitur, haud difficile erit invenire et demonstrare.

DE LUDO ALGEBRAICO.

Sub idem tempus quo theorema illud, ludum etiam algebraicum inveni. Quippe cum vidissem e familiaribus meis nonnullos, per dimidios ferme dies, Scacchorum ludo gnaviter incumbentes, acre eorum studium in re nihili admiratus, rogavi quidnam esset quod tantopere laborarent? Illi porro pergratum animi exercitium renuntiant. Hoc ego mecum reputans, mirabar quamobrem tam pauci ad mathesin, utilissimam sane scientiam eandemque jucundissimam, animum applicarent. An quòd difficilis sit? Sed multi et ingenio valent, nec laborem in nugis fastidiunt ullum. An potius, quòd gratissimum animi exercitium non sit? Sed quænam, quæso, est illa ars, aut disciplina, aut quodcunque demum opus, quod omnem animi facultatem, solertiam, acumen, sagacitatem pulchrius exerceat? Sed ludus est mathesis? Nihilo secius jucunda: eo tamen si venisset nomine, tunc forsan lepidi isti homunciones, qui tempus ludendo terunt, ad ejus studium se protinus accingerent

Digitized by Google

Subiit adhæc sapientissimi viri Johannis Lockii, in re non multum absimili, consilium. Sequentem proinde lusum ad praxin algebræ exercendam, rudi fateor Minerva, excogitavi, sed qualis adolescenti, aliis præsertim studiis occupato, facile spero condonabitur.

Problemata algebraica immediate constituunt æquationes datæ, quæ in quæstionibus determinatis quantitates quæsitas numero exæquant. Quælibet autem æquatio duobus constat membris, æqualitatis signo connexis, in quorum utroque considerandæ veniunt, primo, species, utrum scilicet quantitates datas aut quæsitas designent; deinde, signa quibus connectuntur. Efficere itaque ut hæc omnia ad constituendas quæstiones sorte obveniant, ludumque tam ex quæstionum formatione, quam ex earundem resolutione, concinnare operam damus.

In asserculo, qualis ad Dominarum aut Scacchorum lusum vulgo adhiberi solet, depingatur circulus quadrato inscriptus, reliquaque omnia quæ in apposito schemate continentur; nisi quod loco circellorum nigrantium facienda sint foramina. Quibus peractis, habebimus tabulam lusoriam. Parandus insuper est stylus tenuis e ligno, qui alicui ex dictis foraminibus infigatur. Reliquum est ut horum usum exponamus.

Ut vides, operationum logisticarum symbola ad latera et angulos quadrati scribuntur: porro latera prioribus, anguli vero posterioribus, æquationum membris signa impertiunt. Circulus autem inscriptus a sedecim cuspidibus in totidem partes æquales dispescitur, ita ut tres cuspides ad latus et angulum quemvis spectent, sed aliæ directe, aliæ oblique: quæ oblique latus aliquod aut angulum respiciunt, eæ angulo et lateri communes sunt; quæ vero directe latus aliquod intuentur, eæ ad angulum nullum pertinent, sed ad utrosque adjacentes pariter referuntur. Et vicissem, quæ angulum aliquem directe intuentur, eæ ad latus nullum pertinent, sed ad utraque adjacentia pariter referri censendæ sunt.

Digitized by Google

In formanda itaque quæstione, primo observanda est cuspis quam stylus respicit, latusque et angulum ad quos pertineat; horum signa notentur, quippe quæ, ut diximus, species utriusque cujuslibet æquationis membri connectent. Dein, stylo literæ ad prædictam cuspidem scriptæ imposito, numera 1, eoque inde juxta rectæ lineæ ductum translato (ut faciunt astrologi, nominum quibus feriæ appellantur rationem assignantes) ad literam oppositam, numera 2. Tunc ad alteram lineæ, tanquam continuata esset per annulum intermedium, extremitatem pergens, numera 3; et sic deinceps, donec litera primæ cuspidi adjacens recurrat. Hinc recta descendens ad cuspidem in convexitate interioris circuli terminatam, foramini alterutro adjacenti infige stylum.

Numerus ultimo numeratus indicabit, quot quantitates quæsitæ, vel (quod idem est) quot æquationes datæ fuerint in quæstione. Harum membra priora quantitates ignotæ alternatim sumptæ et signo laterali connexæ, posteriora quantitates cognitæ vel incognitæ (prout determinarit litera ad cuspidem internam scripta) quæsitis signo angulari alligatæ, constituent. Porro d adhibendas quantitatum cognitarum species diversas, s unam solummodo, f figuras numerales 2, 3, 4, &c. x quantitates quæsitas repetendas esse indicat. Notandum autem, in cujusque æquationis membro posteriore non alias poni quantitates ignotas, quam quæ in primo membro sequentis æquationis reperiantur. Dicta exemplis clarescent.

Ponamus itaque stylum occupare foramen stellula insignitum, cuspisque quam respicit pertinebit ad latus cujus signum est +, et ad angulum cujus signum est ×, quæ signa in charta noto, laterale a sinistris sive primum, deinde angulare. Porro e ad cuspidem scribitur, ad quam numero 1; inde (liberum autem est e duabus lineis utriusvis ductum sequi) sinistrorsum pergens offendo a, ad quam numero 2; hinc transiens ad z nume-

Digitized by Google

ro 8; inde autem transversim eunti denuo obversatur e, litera primæ cuspidi apposita, ad quam numerans 4, recta descendo ad cuspidem interiorem litera d insignitam. Erunt igitur quatuor quantitates quæsitæ in quæstione, quæ signo laterali + alternatim connexæ, constituent prima æquationum datarum membra. Posteriora vero fient ex quantitatibus ignotis et notis (propter d) diversis per signum angulare, nimirum ×, conjunctis; ad hunc modum:

$$\begin{array}{ll} a + e = yb & a = ? \\ e + y = zc & e = ? \\ y + z = ad & y = ? \\ z + a = ef & z = ? \end{array}$$

Quod si ponamus stylum foramini præcedenti infixum esse, quo pacto + laterale directe intuebitur, lineæque sinistræ ductum sequamur, provenient tres quantitates investigandæ, et cuspis interior habebit literam f. Unde numerus æquationum datarum, et priorum earundem membrorum signa, itemque posteriorum species determinantur. Sed quoniam in hoc casu cuspis indifferenter se habet respectu duorum angulorum adjacentium, idcirco eorum signa per vices usurpanda sunt: secundum quas conditiones hujusmodi struatur quæstio.

$$\begin{array}{ll} a + e = 2y & a = ? \\ e + y = 3 - a & e = ? \\ y + a = 4e & y = ? \end{array}$$

Posito autem stylum sequenti foramini infigi, cuspis stylaris in + angulare dirigetur, signaque lateralia + et — pariter respiciet. Proinde, si fert animus dextram inire semitam, juxta leges præmissas sequens prodibit quæstio:

$$\begin{array}{ll} a + e = ey & a = ? \\ e - y = ay & e = ? \\ y + a = ae & y = ? \end{array}$$

Digitized by Google

* Notandum autem primo, quod varietatem aliquam in signorum et specierum combinationibus præscriptæ leges admittant. Unde fit, quod cuspide semitaque determinatis, diversæ oriantur quæstiones.

Secundo, quod etsi ad primæ literæ recursum sistendum esse supra statuimus, lex tamen illa pro cujusvis arbitrio mutari possit; ita ut progrediamur donec singulæ, a, e, z, x, obversentur, vel aliqua ex iis bis, vel ad aliam quamcunque metam. Sed ad lusum properamus.

Primum itaque e lusoribus aliquis ad methodum jam traditam quæstionem sibi formet. Quod et cæteris deinceps iis legibus faciendum est. Porro formatis singulorum quæstionibus, ad ejus quæ sorte obtigit solutionem se quisque accingat. Faciat dein unusquisque fractionem, cujus numerator sit numerus quantitatum in suo problemate quæsitarum, et nominator, numerus graduum sive æquationum quas, dum solveretur quæstio, chartis mandabat. Penes quem maxima sit fractio, is vincat.

Proinde, siquando fugitivæ quantitates inhiantem eluserint algebristam, is omni victoriæ spe excidisse censendus est. Neque id prorsus injuria, siquidem potius eligentis culpa quam infortunio accidat quæstionem esse indeterminatam.

Quotiescunque inter ludendum deveniatur ad æquationem affectam supra ordinem quadraticum, nihil opus erit exegesi numerosa aut constructione per parabolam, sufficit si radix incognita mutata specie pro cognita habeatur.

Peractis omnium quæstionum solutionibus, quisque proximi opus percurrat; ad quod Pellii margines conducant.

Quæ pignora et mulctas spectant, quisquam ad libitum comminiscatur: hæc enim aliis permitto.

Problemata quod spectat, illa quidem difficilia non

* Vide Appendicem.

Digitized by Google

sunt, alioqui inepta forent ad lusum; sed ea tamne, quorum solutio in ingens lusorum commodum cesserit, dum rectum tramitem inire student, dum longos consequentiarum nexus animo recolunt, integramque analyseos seriem brevissimo conceptu claudere laborant.

Permitte jam, adolescens optime, ut alios paulisper alloquar; tibi enim, quem ipsa trahit difficultas, nihil opus hortatore. Vos, adolescentes academici, compello, quibus inest sagacitas, mentisque vigor et acumen; tristem vero in musæo solitudinem, duramque eorum qui vulgo audiunt *Pumps*, vitam aversamini, satius inter congerrones, per jocum et lusum, ingenium prodere ducentes. Videtis quam merus lusus sit algebra, et sors locum habet, et scientia: quidni igitur ad tabulam lusoriam accedatis? Neque enim, quod in chartis, scacchis, dominis, &c. usu venit, ut dum alii ludunt, alii oscitanter adstent, hic etiam metuatis. Nam quotcunque ludendi incesserit libido, iis omnibus ludere simul ac studere, adde et nonnullis, lucelli aliquid corradere fas est. Ast aliquem audire mihi videor in hujusmodi verba erumpentem: Itane vero nos decipi posse putas? Non ii sumus, quos ad difficillimam artem sudore multo addiscendum, oblata lusus specie, inescare liceat. Respondeo, algebram eatenus esse difficilem quantum ad lusum requiritur: quod si tollas omnem difficultatem, tollitur simul recreatio omnis ac voluptas. Siquidem ludi omnes totidem sunt artes et scientiæ; nec aliud est inter cæteros et hunc nostrum discrimen, quam quod illi præsens solummodo oblectamentum spectent; ex hoc vero, præter jucundissimum laborem, alii etiam iique uberrimi fructus percipiantur. Tantum autem abest quod hoc in lusus detrimentum cedat, ut is idcirco omnibus numeris absolutus jure habeatur, juxta tritum illud poetæ,

Omne tulit punctum qui miscuit utile dulci.

Digitized by Google

Sed quinam sunt illi quos prædicas fructus? Hos ut enumerem, universa, quaqua patet, mathesis, artesque omnes ac scientiæ, quas rem militarem, civilem, et philosophicam promoventes complectitur, perlustrandæ forent. Quippe per hasce omnes diffunditur mirifica algebræ vis. Eadem apud omnes ars magna, mirabilis, supremus cognitionis humanæ apex, universæ matheseos nucleus et clavis, imo apud nonneminem scientiarum omnium fundamentum audit. Et sane quam difficile esset algebræ limites assignare, cum philosophiam etiam naturalem et medicinam jamdudum invasit, inque dies dissitissima quæque argumenta aggreditur. Ut alia taceam in Actis Philosoph. N°. 257, de certitudine testimoniorum et traditionum humanarum algebraica extant theoremata. Et pro certo statuendum est, ubicunque datur magis ac minus, ubicunque ratio aliqua aut proportio invenitur, ibi locum habere algebram.

Verum dixerit fortasse aliquis, se nec mathesin ipsam, nec res mathematice tractatas morari. Ut lubet: demus hoc voluntati cujuspiam, demus ignorantiæ: nimirum ex ignorantia rerum præclarissimarum, * *quæque vos a barbaris distinguunt*, contemptum proficisci affirmare ausim. Estne vero quisquam qui ingenium sagax, intellectum capacem, judicium acre parvi faciat? Siquis usque adeo rationis expers inveniatur, is demum mathesin spernat, quæ quanti sit momenti ad optimos quosque mentis habitus comparandos, apud omnes in confesso est.

Verulamius alicubi, in iis quæ de augmentis scientiarum conscripsit, analogiam quandam inter pilæ palmariæ lusum et mathesin notat. Nempe quemadmodum per illum, ultra voluptatem quæ primum intenditur, alia eaque potiora consequamur, *viz.* corporis agilitatem et

* Vide Tentamen Anglicum de hortis Epicuri, a Gulielmo Temple Equite Aurato conscriptum.

Digitized by Google

robur, promptumque oculorum motum: sic disciplinæ mathematicæ, præter fines ac usus singulis proprios, illud etiam collaterale habent, quod mentem a sensibus abstrahant, ingeniumque acuant et figant. Idem hoc tam olim veteres, quam hodie e modernis cordatiore quique agnoscunt. Quod vero recentiorum algebra ad ingenium formandum imprimis conducat, inter alios ostendunt Cartesius, et prolixe Malbranchius de inquirenda veritate, lib. vi. part. 1. cap. 5. et part. 2. cap. 8. alibique passim. Et regulæ quidem quas hic in quæstionum solutione observandas tradit, lib. vi. part. 2. cap. 1. quæque tam sunt eximiæ, ut meliores angelum non fuisse daturum credat author quidam ingeniosus: illæ, inquam, regulæ angelicæ ex algebra desumi videntur. At quid alios memorem, cum vir omni laude major, Johannes Lockius, qui singulos intellectus humani defectus, eorumque remedia, siquis alius, optime callebat, cum universæ matheseos, tum præsertim algebræ studium, omnibus supra plebem positis, tanquam rem infiniti usus vehementer commendat? Vide inter opera ejus posthuma, pag. 30, 31, 32, &c. Tractatus de regimine intellectus: opus exiguum quidem illud et imperfectum, sed quod vastis et elaboratis aliorum voluminibus jure quisquam prætulerit. At vero autor magni nominis ad disciplinas mathematicas acrem nimis meditationem, quæque homini generoso et voluptatibus studenti minus conveniat, requiri putat. Respondeo, suadente Lockio, frustra opponi dissidentis Santevremontii judicium. Deinde hic ineptus matheseos judex merito habeatur, quippe qui, uti ex ejus vita et scriptis plusquam verisimile est, eam vix a limine salutarat. Si vero cortex durus videatur et exsiccus, quid mirum? Sed ut dicam quod res est; præstat singulos rem ipsam expertos propria sequi judicia. Nec est cur quis ingentes difficultates sibi fingat, eo quod vox algebra nescio quid asperum sonat et horrificum; artem enim, quantum ad ludum

Digitized by Google

nostrum requiritur, intra breve unius mensis spatium facile quisquam perdiscat.

Exposita demum lusus et consilii nostri ratione, lectorem mathematicum, ut tenues istas studiorum meorum primitias candide accipiat, rogo, potiora forsan posthac daturus. Impræsentiarum autem me alia distinent studia quæ, arida satis et jejuna, suavissimam mathesin exceperunt. Tu interim, clarissime adolescens, hanc nugarum rhapsodiam, tanquam aliquod mei erga te amoris symbolum, cape, et vale.

Digitized by Google

APPENDIX.

Ut mentem nostram quilibet plenissime assequatur, visum est sequentibus paginis omnem in quæstionibus combinationum et specierum varietatem, quam præfatæ ludendi conditiones patiantur, oculis subjicere.

Notandum autem, primo, quod sequentes formulæ quoad modos combinandi et quantitatum species, non item omnes quoad numerum æquationum datarum, ad cuspides respectivas pertinent: sæpe enim plures quam tres quantitates investigandæ erunt.

Secundo, quod ut omnes quæstionum formulæ haberi possint, metæ diversæ, prout fieri posse supra monuimus, statuendæ sunt: alioqui duæ tantum ex quatuor classibus ad cuspidem quamcunque pertinebunt.

Primam dico cuspidem quæ in + laterale dirigitur, secundam huic a dextris proximam, atque ita porro.

Digitized by Google

AD

LECTOREM.

Ista adolescentiæ nostræ, obiter tantum proprioque marte ad quantulamcunque matheseos scientiam olim enitentis, conamina in lucem protrusisse sero aliquoties pœnituit. Quin et pœniteret etiamnum, nisi quod hinc nobile par ingeniorum in spem nascentis sæculi succrescentium una propalandi enascatur occasio: neque enim nos aliunde rempublicam literariam demereri gloriamur. Atque hæc quidem ad temeritatis, &c. censuram, ut et invidiam, si quam mihi forte conflaverim, amoliendum dicta intelligantur.

Digitized by Google

Cuspis prima.

$$a+e=b\times e\ e-b\ b\times y\ y-b\ e\times b\ b-e\ y\times b\ b-y$$
$$e+y=b-y\ y\times b\ b-a\ a\times b\ y-b\ b\times y\ a-b\ b\times a$$
$$s\ y+a=b\times a\ a-b\ b\times e\ e-b\ a\times b\ b-a\ e\times b\ b-e$$

$$a+e=b\times e\ e-b\ b\times y\ y-b\ e\times b\ b-e\ y\times b\ b-y$$
$$e+y=c-y\ y\times c\ c\times a\ a\times c\ y-c\ c\times y\ a-c\ c\times a$$
$$d\ y+a=d\times a\ a-d\ d\times e\ e-d\ a\times d\ d-a\ e\times d\ d-e$$

$$a+e=2\times e\ e-2\ 2\times y\ y-2\ e\times 2\ 2-e\ y\times 2\ 2-y$$
$$e+y=3-y\ y\times 3\ 3-a\ a\times 3\ y-3\ 3\times y\ a-3\ 3\times a$$
$$f\ y+a=4\times a\ a-4\ 4\times e\ e-4\ a\times 4\ 4-a\ e\times 4\ 4-e$$

$$a+e=e\times y\ e-y\ e\times y\ y-e$$
$$e+y=y-a\ y\times a\ a-y\ a\times y$$
$$x\ y+a=a\times e\ a-e\ a\times e\ e-a$$

Cuspis secunda.

$$a+e=b\times e\ b\times y$$
$$e+y=b\times y\ b\times a$$
$$s\ y+a=b\times a\ b\times e$$

$$a+e=b\times e\ b\times y$$
$$e+y=c\times y\ c\times a$$
$$d\ y+a=d\times a\ d\times e$$

$$a+e=2\times e\ 2\times y$$
$$e+y=3\times y\ 3\times a$$
$$f\ y+a=4\times a\ 4\times e$$

$$a+e=e\times y$$
$$e+y=y\times a$$
$$x\ y+a=a\times e$$

Digitized by Google

Cuspis tertia.

$a + e\ a - e = e \times b\ y \times b$
$e - y\ e + y = y \times b\ a \times b$
$y + a\ y - a = a \times b\ e \times b$

$a + e\ a - e = e \times b\ y \times b$
$d\ e - y\ e + y = y \times c\ a \times c$
$y + a\ y - a = a \times d\ e \times d$

$a + e\ a - e = e \times 2\ y \times 2$
$f\ e - y\ e + y = y \times 3\ a \times 3$
$y + a\ y - a = a \times 4\ e \times 4$

$a + e\ a - e = e \times y$
$x\ e - y\ e + y = y \times a$
$y + a\ y - a = a \times e$

Cuspis quarta.

$a - e = b \times e\ b \times y$
$s\ e - y = b \times y\ b \times a$
$y - a = b \times a\ b \times e$

$a - e = b \times e\ b \times y$
$d\ e - y = c \times y\ c \times a$
$y - a = d \times a\ d \times e$

$a - e = 2 \times e\ 2 \times y$
$f\ e - y = 3 \times y\ 3 \times a$
$y - a = 4 \times a\ 4 \times e$

$a - e = e \times y$
$x\ e - y = y \times a$
$y - a = a \times e$

Digitized by Google

Cuspis quinta.

$a - e = e \times b \quad b \div e \quad y \times b \quad b \div y \quad b \times e \quad e \div b \quad b \times y \quad y \div b$
$s \quad e - y = y \div b \quad b \times y \quad a \div b \quad b \times a \quad b \div y \quad y \times b \quad b \div a \quad a \times b$
$y - a = a \times b \quad b \div a \quad e \times b \quad b \div e \quad b \times a \quad a \div b \quad b \times e \quad e \div b$

$a - e = e \times b \quad b \div e \quad y \times b \quad b \div y \quad b \times e \quad e \div b \quad b \times y \quad y \div b$
$d \quad e - y = y \div c \quad c \times y \quad a \div c \quad c \div a \quad c \div y \quad y \times c \quad c \div a \quad a \times c$
$y - a = a \times d \quad d \div a \quad e \times d \quad d \div e \quad d \times a \quad a \div d \quad d \times e \quad e \div d$

$a - e = e \times 2 \quad 2 \div e \quad y \times 2 \quad 2 \div y \quad 2 \times e \quad e \div b \quad 2 \times y \quad y \div 2$
$f \quad e - y = y \div 3 \quad 3 \times y \quad a \div 3 \quad 3 \times a \quad 3 \div y \quad y \times c \quad 3 \div a \quad a \times 3$
$y - a = a \times 4 \quad 4 \div e \quad e \times 4 \quad 4 \div e \quad 4 \times a \quad a \div d \quad 4 \times e \quad e \div 4$

$a - e = e \times y \quad e \div y \quad e \times y \quad y \div e$
$x \quad e - y = y \div a \quad y \times a \quad a \div y \quad a \times y$
$y - a = a \times e \quad a \div e \quad a \times e \quad e \div a$

Cuspis sexta.

$a - e = b \div e \quad b \div y \quad e \div b \quad y \div b$
$s \quad e - y = b \div y \quad b \div a \quad y \div b \quad a \div b$
$y - a = b \div a \quad b \div e \quad a \div b \quad e \div b$

$a - e = b \div e \quad b \div y \quad e \div b \quad y \div b$
$d \quad e - y = c \div y \quad c \div a \quad y \div e \quad a \div c$
$y - a = d \div a \quad d \div e \quad a \div d \quad e \div d$

$a - e = 2 \div e \quad 2 \div y \quad e \div 2 \quad y \div 2$
$f \quad e - y = 3 \div y \quad 3 \div a \quad y \div 3 \quad a \div 3$
$y - a = 4 \div a \quad 4 \div \div e \quad a \div 4 \div 4$

$a - e = e \div y \quad y \div e$
$x \quad e - y = y \div a \quad a \div y$
$y - a = a \div e \quad e \div a$

Digitized by Google

Cuspis septima.

$a - e\ a \times e = e \div b\ b \div e\ y \div b\ b \div y$
$s\ e \times y\ e - y = y \div b\ b \div y\ a \div b\ b \div a$
$y - a\ y \times a = a \div b\ b \div a\ e \div b\ b \div e$

$a - e\ a \times e = e \div b\ b \div e\ y \div b\ b \div y$
$d\ e \times y\ e - y = y \div c\ c \div y\ a \div c\ c \div a$
$y - a\ y \times a = a \div d\ d \div a\ e \div d\ d \div e$

$a - e\ a \times e = e \div 2\ 2 \div e\ y \div 2\ 2 \div y$
$f\ e + y\ e - y = y \div 3\ 3 \div y\ a \div 3\ 3 \div a$
$y - a\ y \times a = a \div 4\ 4 \div a\ e \div 4\ 4 \div e$

$a - e\ a \times e = e \div y\ y \div e$
$x\ e + y\ e - y = y \div a\ a \div y$
$y - a\ y \times a = a \div e\ e \div a$

Cuspis octava.

$a \times e = e \div b\ b \div e\ y \div b\ b \div y$
$s\ e \times y = y \div b\ b \div y\ a \div b\ b \div a$
$y \times a = a \div b\ b \div a\ e \div b\ d \div e$

$a \times e = e \div b\ b \div e\ y \div b\ b \div y$
$d\ e \times y = y \div c\ c \div y\ a \div c\ c \div a$
$y \times a = a \div d\ d \div a\ e \div d\ d \div e$

$a \times e = e \div 2\ 2 \div e\ y \div 2\ 2 \div y$
$f\ e \times y = \div y\ 3\ 3 \div y\ a \div 3\ 3 \div a$
$y \times a = a \div 4\ 4 \div a\ e \div 4\ 4 \div e$

$a \times e = e \div y\ y \div e$
$x\ e \times y = y \div a\ a \div y$
$y \times a = a \div e\ e \div a$

Digitized by Google

Cuspis nona.

$$a \times e = b + e\ e \div b\ b + y\ y \div b\ e + b\ b \div e\ y + b\ b \div y$$
$$s\ e \times y = b + y\ y + b\ b \div a\ a + b\ y \div b\ b + y\ a \div b\ b + a$$
$$y \times a = b + a\ a \div b\ b + e\ e \div b\ a + b\ b \div a\ e + b\ b \div e$$

$$a \times e = b + e\ e \div b\ b + y\ y \div b\ e + b\ b \div e\ y + b\ b \div y$$
$$d\ e \times y = c \div y\ y + c\ c \div a\ a + e\ y \div c\ c + y\ a \div c\ c + a$$
$$y \times a = d + a\ a \div d\ d + e\ e \div d\ a + d\ d \div a\ e + d\ d \div e$$

$$a \times e = 2 + e\ e \div 2\ 2 + y\ y \div 2\ e + 2\ 2 \div e\ y + 2\ 2 \div y$$
$$f\ e \times y = 3 \div y\ y + 3\ 3 \div a\ a + 3\ y \div 3\ 3 + y\ a \div 3\ 3 + a$$
$$y \times a = 4 + a\ a \div 4\ 4 + e\ e \div 4\ a + 4\ 4 \div a\ e + 4\ 4 \div e$$

$$a \times e = e + y\ e \div y\ e + y\ y \div e$$
$$x\ e \times y = y \div a\ y + a\ a \div y\ a + y$$
$$y \times a = a + e\ a \div e\ a + e\ e \div a$$

Cuspis decima.

$$a \times e = e + b\ y + b$$
$$s\ e \times y = y + b\ a + b$$
$$y \times a = a + b\ e + b$$

$$a \times e = e + b\ y + b$$
$$d\ e \times y = y + c\ a + c$$
$$y \times a = a + d\ e + d$$

$$a \times e = e + 2\ y + 2$$
$$f\ e \times y = y + 3\ a + 3$$
$$y \times a = a + 4\ e + 4$$

$$a \times e = e + y$$
$$x\ e \times y = y + a$$
$$y \times a = a + e$$

Digitized by Google

Cuspis undecima.

$a \times e\ a \div e = e + b\ y + b$
$x\ e \div y\ e \times y = y + b\ a + b$
$y \times a\ y \div a = a + b\ e + b$

$a \times e\ a \div e = e + b\ y + b$
$d\ e \div y\ e \times y = y + c\ a + c$
$y \times a\ y \div a = a + d\ e + d$

$a \times e\ a \div e = e + 2\ y + 2$
$f\ e \div y\ e \times y = y + 3\ a + 3$
$y \times a\ y \div a = a + 4\ e + 4$

$a \times e\ a \div e = e + y$
$x\ e \div y\ e \times y = y + a$
$y \times a\ y \div a = a + e$

Cuspis duodecima.

$a \div e = b + e\ b + y$
$s\ e \div y = b + y\ b + a$
$y \div a = b + a\ b + e$

$a \div e = b + e\ b + y$
$d\ e \div y = c + y\ c + a$
$y \div a = d + a\ d + e$

$a \div e = 2 + e\ 2 + y$
$f\ e \div y = 3 + y\ 3 + a$
$y \div a = 4 + a\ 4 + e$

$a \div e = e + y$
$x\ e \div y = y + a$
$y \div a = a + e$

Digitized by Google

Cuspis decima tertia.

$$a \div e = e + b\,b - e\,y + b\,b - y\,b + e\,e - b\,b + y\,y - b$$
$$s\ e \div y = y - b\,b + y\,a - b\,b + a\,b - y\,y + b\,b - a\,a + b$$
$$y \div a = a + b\,b - a\,e + b\,b - e\,b + a\,a - b\,b + e\,e - b$$

$$a \div e = e + b\,b - e\,y + b\,b - y\,b + e\,e - b\,b + y\,y - b$$
$$d\ e \div y = y - c\,c + y\,a - c\,c + a\,c - y\,y + c\,e - a\,a + c$$
$$y \div a = a + d\,d - a\,e + d\,d - e\,d + a\,a - d\,d + e\,e - d$$

$$a \div e = e + 2\,2 - e\,y + 2\,2 - y\,2 + e\,e - 2\,2 + y\,y - 2$$
$$x\ e \div y = y - 3\,3 + y\,a - 3\,3 + a\,3 - y\,y + 3\,3 - a\,a + 3$$
$$y \div a = a + 4\,4 - a\,e + 4\,4 - e\,4 + a\,a - 4\,4 + e\,e - 4$$

$$a \div e = e + y\,e - y\,e + y\,y - e$$
$$x\ e \div y = y - a\,y + a\,a - y\,a + y$$
$$y \div a = a + e\,a - e\,a + e\,e - a$$

Cuspis decima quarta.

$$a \div e = b - e\,b - y\,e - b\,y - b$$
$$s\ e \div y = b - y\,b - a\,y - b\,a - b$$
$$y \div a = b - a\,b - e\,a - b\,e - b$$

$$a \div e = b - e\,b - y\,e - b\,y - b$$
$$d\ e \div y = c - y\,c - a\,y - c\,a - c$$
$$y \div a = d - a\,d - e\,a - d\,e - d$$

$$a \div e = 2 - e\,2 - y\,e - 2\,y - 2$$
$$f\ e \div y = 3 - y\,3 - a\,y - 3\,a - 3$$
$$y \div a = 4 - a\,4 - e\,a - 4\,e - 4$$

$$a \div e = e - y\,y - e$$
$$x\ e \div y = y - a\,a - y$$
$$y \div a = a - e\,e - a$$

Digitized by Google

Cuspis decima quinta.

$$a \div e\ a + e = e - b\ y - b\ b - e\ b - y$$
$$s\ e + y\ e \div y = y - b\ a - b\ b - y\ b - a$$
$$y \div a\ y + a = a - b\ e - b\ b - a\ b - e$$

$$a \div e\ a + e = e - b\ y - b\ b - e\ b - y$$
$$d\ e + y\ e \div y = y - c\ a - c\ c - y\ c - a$$
$$y \div a\ y + a = a - d\ e - d\ d - a\ d - e$$

$$a \div e\ a + e = e - 2\ y - 2\ 2 - e\ 2 - y$$
$$f\ e + y\ e \div y = y - 3\ a - 3\ 3 - y\ 3 - a$$
$$y \div a\ y + a = a - 4\ e - 4\ 4 - a\ 4 - e$$

$$a \div e\ a + e = e - y\ y - e$$
$$x\ e + y\ e \div y = y - a\ a - y$$
$$y \div a\ y + a = a - e\ e - a$$

Cuspis decima sexta.

$$a + e = e - b\ y - b\ b - e\ b - y$$
$$s\ a + y = y - b\ a - b\ b - y\ b - a$$
$$y + a = a - b\ e - b\ b - a\ b - e$$

$$a + e = e - b\ y - b\ b - e\ b - y$$
$$d\ e + y = y - c\ a - c\ c - y\ c - a$$
$$y + a = a - d\ e - d\ d - a\ d - e$$

$$a + e = e - 2\ y - 2\ 2 - e\ 2 - y$$
$$f\ e + y = y - 3\ a - 3\ 3 - y\ 3 - a$$
$$y + a = a - 4\ e - 4\ 4 - a\ 4 - e$$

$$a + e = e - y\ y - e$$
$$x\ e + y = y - a\ a - y$$
$$y + a = a - e\ e - a$$

Digitized by Google

N. B. Est et alia varietas in prioribus æquationum membris ubi signum analyticum reperitur, *viz.* si species transponamus. *E. g.* in cuspide quarta adhibitis $\left\{\begin{matrix} e - a \\ y - e \\ a - y \end{matrix}\right\}$ in duodecima $\left\{\begin{matrix} e \div a \\ y \div e \\ a \div y \end{matrix}\right\}$ duplicabuntur quæstiones.

Ne quis forte putet quæstiones omnes in ludo nostro possibiles a tabulis exhiberi, notandum est illas revera esse innumeras. Nam metæ infinities variari poterunt: ex his vero pendet numerus quantitatum in quovis problemate quæsitarum, qui proinde pro metarum diversitate erit infinite variabilis; unde quæstiones orientur innumeræ, in quarum tamen singulis non aliæ servandæ sunt methodi pro signis, combinationibus, et speciebus determinandis, quàm quæ in solis quæstionibus imparis cujusvis præter unitatem numeri quantitatum quæsitarum, atque adeo in tabulis quas apposuimus exhibeantur.

Digitized by Google

Digitized by Google

DE

MOTU;

SIVE DE

MOTUS PRINCIPIO ET NATURA,

ET DE

CAUSA COMMUNICATIONIS MOTUUM.

Digitized by Google

Digitized by Google

DE

MOTU;

SIVE

DE MOTUS PRINCIPIO ET NATURA, ET DE CAUSA COMMUNICATIONIS MOTUUM.

1. Ad veritatem inveniendam præcipuum est cavisse ne voces male intellectæ nobis officiant: quod omnes fere monent philosophi, pauci observant. Quanquam id quidem haud adeo difficile videtur, in rebus præsertim physicis tractandis, ubi locum habent sensus, experientia, et ratiocinium geometricum. Seposito igitur, quantum licet, omni præjudicio, tam a loquendi consuetudine quam a philosophorum auctoritate nato, ipsa rerum natura diligenter inspicienda. Neque enim cujusquam auctoritatem usque adeo valere oportet, ut verba ejus et voces in pretio sint, dummodo nihil clari et certi iis subesse comperiatur.

2. Motus contemplatio mire torsit veterum philosophorum mentes, unde natæ sunt variæ opiniones supra modum difficiles, ne dicam absurdæ, quæ quum jam fere in desuetudinem abierint, haud merentur ut iis discutiendis nimio studio immoremur. Apud recentiores autem et saniores hujus ævi philosophos, ubi de motu agitur, vocabula haud pauca abstractæ nimium et obscuræ significationis occurrunt, cujusmodi sunt *solicitatio gravitatis, conatus, vires mortuæ*, &c. quæ scriptis alioqui doctissimis tenebras offundunt, sententiisque non minus a vero quàm a sensu hominum communi abhorrentibus ortum præbent. Hæc vero necesse est ut,

Digitized by Google

veritatis gratia, non alios refellendi studio, accurate discutiantur.

3. Solicitatio et nisus sive conatus rebus solummodo animatis revera competunt. Cùm aliis rebus tribuuntur, seusu metaphorico accipiantur necesse est. A metaphoris autem abstinendum philosopho. Porro seclusa omni tam animæ affectione quam corporis motione, nihil clari ac distincti iis vocibus significari cuilibet constabit, qui modo rem serio perpenderit.

4. Quamdiu corpora gravia a nobis sustinentur, sentimus in nobismet ipsis nisum, fatigationem, et molestiam. Percipimus etiam in gravibus cadentibus motum acceleratum versus centrum telluris: ope sensuum præterea nihil. Ratione tamen colligitur causam esse aliquam vel principium horum phænomenon; illud autem *gravitas* vulgo nuncupatur. Quoniam vero causa descensus gravium cæca sit et incognita, gravitas eâ acceptione proprie dici nequit qualitas sensibilis; est igitur qualitas occulta. Sed vix, et ne vix quidem, concipere licet quid sit qualitas occulta, aut qua ratione qualitas ulla agere aut operari quidquam possit. Melius itaque foret, si, missa qualitate occulta, homines attenderent solummodo ad effectus sensibiles, vocibusque abstractis (quantumvis illæ ad disserendum utiles sint) in meditatione omissis, mens in particularibus et concretis, hoc est in ipsis rebus, defigeretur.

5. *Vis* similiter corporibus tribuitur: usurpatur autem vocabulum illud, tanquam significaret qualitatem cognitam, distinctamque tam a motu, figura, omnique alia re sensibili, quam ab omni animali affectione: id vero nihil aliud esse quam qualitatem occultam, rem acrius rimanti constabit. Nisus animalis et motus corporeus vulgo spectantur tanquam symptomata et mensuræ hujus qualitatis occultæ.

6. Patet igitur gravitatem aut vim frustra poni pro principio motus: nunquid enim principium illud clarius cognosci potest ex eo quod dicatur qualitas occulta?

Digitized by Google

Quod ipsum occultum est, nihil explicat. Ut omittamus causam agentem incognitam rectius dici posse substantiam quam qualitatem. Porro *vis*, *gravitas*, et istiusmodi voces sæpius, nec inepte, in concreto usurpantur, ita ut connotent corpus motum, difficultatem resistendi, &c. Ubi vero a philosophis adhibentur ad significandas naturas quasdam ab hisce omnibus præcisas et abstractas, quæ nec sensibus subjiciuntur nec ulla mentis vi intelligi nec imaginatione effingi possunt, tum demum errores et confusionem pariunt.

7. Multos autem in errorem ducit, quod voces generales et abstractas in disserendo utiles esse videant, nec tamen earum vim satis capiant. Partim vero a consuetudine vulgari inventæ sunt illæ ad sermonem abbreviandum, partim a philosophis ad docendum excogitatæ; non quod ad naturas rerum accommodatæ sint, quæ quidem singulares et concretæ existunt, sed quod idoneæ ad tradendas disciplinas, propterea quod faciant notiones vel saltem propositiones universales.

8. Vim corpoream esse aliquid conceptu facile plerumque existimamus: ii tamen qui rem accuratius inspexerunt in diversa sunt opinione, uti apparet ex mira verborum obscuritate qua laborant, ubi illam explicare conantur. Toricellius ait vim et impetum esse res quasdam abstractas subtilesque, et quintessentias quæ includuntur in substantia corporea, tanquam in vase magico Circes.* Leibnitius item in naturæ vi explicanda hæc habet. *Vis activa, primitiva, quæ est ἐντελέχεια πρώτη animæ vel formæ substantiali respondet.* Vide *Acta Erudit: Lips.* Usque adeo necesse est ut vel summi viri, quamdiu abstractionibus indulgent, voces nulla certa significatione præditas et meras scholasticorum umbras

* La materia altro non e che un vaso di Circe incantato, il quale serve per ricettacolo della forza et de momenti dell' impeto: la forza et l'impeti sono astratti tanto sottili, sono quintessenze tanto spiritose, che in altre ampolle non si possono rachiudere, fuor ch nell' intima corpulenza dè solidi naturali. Vide *Lezioni Academiche.*

Digitized by Google

sectentur. Alia ex neotericorum scriptis, nec pauca quidem ea, producere liceret, quibus abunde constaret, metaphysicas abstractiones non usquequaque cessisse mechanicæ et experimentis, sed negotium inane philosophis etiamnum facessere.

9. Ex illo fonte derivantur varia absurda, cujus generis est illud, *vim percussionis utcunque exiguæ esse infinite magnam.* Quod sane supponit, gravitatem esse qualitatem quandam realem ab aliis omnibus diversam; et gravitationem esse quasi actum hujus qualitatis a motu realiter distinctum; minima autem percussio producit effectum majorem quàm maxima gravitatio sine motu: illa scilicet motum aliquem edit, hæc nullum. Unde sequitur, vim percussionis ratione infinita excedere vim gravitationis, hoc est, esse infinite magnam. Videantur experimenta Galilæi, et quæ de definita vi percussionis scripserunt Torricellius, Borellus, et alii.

10. Veruntamen fatendum est vim nullam per se immediate sentiri, neque aliter quàm per effectum cognosci et mensurari: sed vis mortuæ seu gravitationis simplicis, in corpore quiescente subjecto nulla facta mutatione, effectus nullus est; percussionis autem, effectus aliquis. Quoniam ergo vires sunt effectibus proportionales, concludere licet vim mortuam esse nullam: neque tamen propterea vim percussionis esse infinitam: non enim oportet quantitatem ullam positivam habere pro infinita, propterea quod ratione infinita superet quantitatem nullam sive nihil.

11. Vis gravitationis a momento secerni nequit; momentum autem sine celeritate nullum est, quum sit moles in celeritatem ducta: porro celeritas sine motu intelligi non potest; ergo nec vis gravitationis. Deinde vis nulla nisi per actionem innotescit, et per eandem mensuratur; actionem autem corporis a motu præscindere non possumus: ergo quamdiu corpus grave plumbi subjecti vel chordæ figuram mutat, tamdiu movetur; ubi vero quiescit, nihil agit, vel, quod idem est, agere

Digitized by Google

prohibetur. Breviter, voces istæ *vis mortua* et *gravitatio*, etsi per abstractionem metaphysicam aliquid significare supponuntur diversum a movente, moto, motu et quiete, revera tamen id totum nihil est.

12. Siquis diceret pondus appensum vel impositum agere in chordam, quoniam impedit quominus se restituat vi elastica; dico, pari ratione corpus quodvis inferum agere in superius incumbens, quoniam illud descendere prohibet: dici vero non potest actio corporis, quod prohibeat aliud corpus existere in eo loco quem occupat.

13. Pressionem corporis gravitantis quandoque sentimus. Verum sensio ista molesta oritur ex motu corporis istius gravis fibris nervisque nostri corporis communicato, et eorundem situm immutante; adeoque percussioni accepta referri debet. In hisce rebus multis et gravibus præjudiciis laboramus, sed illa acri atque iterata meditatione subigenda sunt, vel potius penitus averruncanda.

14. Quo probetur quantitatem ullam esse infinitam, ostendi oportet partem aliquam finitam homogeneam in ea infinities contineri. Sed vis mortua se habet ad vim percussionis, non ut pars ad totum, sed ut punctum ad lineam, juxta ipsos vis infinitæ percussionis auctores. Multa in hanc rem adjicere liceret, sed vereor ne prolixus sim.

15. Ex principiis præmissis lites insignes solvi possunt, quæ viros doctos multum exercuerunt. Hujus rei exemplum sit controversia illa de proportione virium. Una pars dum concedit, momenta, motus, impetus, data mole, esse simpliciter ut velocitates, affirmat vires esse ut quadrata velocitatum. Hanc autem sententiam supponere vim corporis distingui a momento, motu, et impetu, eaque suppositione sublata corruere, nemo non videt.

16. Quo clarius adhuc appareat, confusionem quandam miram per abstractiones metaphysicas in doctrinam de motu introductam esse, videamus quantum intersit inter notiones virorum celebrium de vi et impetu.

Digitized by Google

Leibnitius impetum cum motu confundit. Juxta Newtonum impetus revera idem est cum vi inertiæ. Borellus asserit impetum non aliud esse quam gradum velocitatis. Alii impetum et conatum inter se differre, alii non differre volunt. Plerique vim motricem motui proportionalem intelligunt. Nonnulli aliam aliquam vim præter motricem, et diversimode mensurandam, utpote per quadrata velocitatum in moles, intelligere præ se ferunt. Sed infinitum esset hæc prosequi.

17. *Vis, gravitas, attractio,* et hujusmodi voces, utiles sunt ad ratiocinia et computationes de motu et corporibus motis; sed non ad intelligendam simplicem ipsius motus naturam, vel ad qualitates totidem distinctas designandas. Attractionem certe quod attinet, patet illam ab Newtono adhiberi, non tanquam qualitatem veram et physicam, sed solummodo ut hypothesin mathematicam. Quin et Leibnitius, nisum elementarem seu solicitationem ab impetu distinguens, fatetur illa entia non re ipsa inveniri in rerum natura, sed abstractione facienda esse.

18. Similis ratio est compositionis et resolutionis virium quarumcunque directarum in quascunque obliquas, per diagonalem et latera parallelogrammi. Hæc mechanicæ et computationi inserviunt: sed aliud est computationi et demonstrationibus mathematicis inservire, aliud rerum naturam exhibere.

19. Ex recentioribus multi sunt in ea opinione, ut putent motum neque destrui nec de novo gigni, sed eandem semper motus quantitatem permanere. Aristoteles etiam dubium illud olim proposuit, utrum motus factus sit et corruptus, an vero ab æterno? *Phys.* lib. xiii. Quod vero motus sensibilis pereat, patet sensibus: illi autem eundem impetum, nisum, aut summam virium eandem manere velle videntur. Unde affirmat Borellus, vim in percussione non imminui, sed expandi; impetus etiam contrarios suscipi et retineri in eodem corpore. Item Leibnitius nisum ubique et semper esse in materia, et ubi non patet sensibus, ratione intelligi

Digitized by Google

contendit. Hæc autem nimis abstracta esse et obscura, ejusdemque fere generis cum formis substantialibus et entelechiis, fatendum.

20. Quotquot ad explicandam motus causam atque originem vel principio hylarchico, vel naturæ indigentia, vel appetitu, aut denique instinctu naturali utuntur, dixisse aliquid potius quam cogitasse censendi sunt. Neque ab hisce multum absunt qui supposuerint, "partes terræ esse se moventes, aut etiam spiritus iis implantatos ad instar formæ,"* ut assignent causam accelerationis gravium cadentium: aut qui dixerit, "in corpore præter solidam extensionem debere etiam poni aliquid unde virium consideratio oriatur."† Siquidem hi omnes vel nihil particulare et determinatum enuntiant; vel, si quid sit, tam difficile erit illud explicare, quam id ipsum cujus explicandi causa adducitur.

21. Frustra ad naturam illustrandam adhibentur ea quæ nec sensibus patent, nec ratione intelligi possunt. Videndum ergo quid sensus, quid experientia, quid demum ratio iis innixa suadeat. Duo sunt summa rerum genera, corpus et anima. Rem extensam, solidam, mobilem, figuratam, aliisque qualitatibus quæ sensibus occurrunt præditam, ope sensuum; rem vero sentientem, percipientem, intelligentem, conscientia quadam interna cognovimus. Porro res istas plane inter se diversas esse, longeque heterogeneas, cernimus. Loquor autem de rebus cognitis: de incognitis enim disserere nil juvat.

22. Totum id quod novimus, cui nomen *corpus* indidimus, nihil in se continet quod motus principium seu causa efficiens esse possit: etenim impenetrabilitas, extensio, figura nullam includunt vel connotant potentiam producendi motum; quinimo e contrario non modo illas, verum etiam alias, quotquot sint, corporis, qualitates sigillatim percurrentes, videbimus omnes esse revera passivas, nihilque iis activum inesse, quod ullo modo intelligi possit tanquam fons et principium motus.

* Borellus. † Leibnitius.

Digitized by Google

Gravitatem quod attinet, voce illa nihil cognitum et ab ipso effectu sensibili, cujus causa quæritur, diversum significari jam ante ostendimus. Et sane quando corpus grave dicimus, nihil aliud intelligimus, nisi quod feratur deorsum, de causa hujus effectus sensibilis nihil omnino cogitantes.

23. De corpore itaque audacter pronunciare licet, utpote de re comperta, quod non sit principium motus. Quod si quisquam, præter solidam extensionem ejusque modificationes, vocem *corpus* qualitatem etiam occultam, virtutem, formam, essentiam complecti sua significatione contendat; licet quidem illi inutili negotio sine ideis disputare, et nominibus nihil distincte exprimentibus abuti. Cæterum sanior philosophandi ratio videtur ab notionibus abstractis et generalibus (si modo notiones dici debent quæ intelligi nequeunt) quantum fieri potest abstinuisse.

24. Quicquid continetur in idea corporis novimus; quod vero novimus in corpore, id non esse principium motus constat. Qui præterea aliquid incognitum in corpore, cujus ideam nullam habent, comminiscuntur, quod motus principium dicant, ii revera nihil aliud quam principium motus esse incognitum dicunt. Sed hujusmodi subtilitatibus diutius immorari piget.

25. Præter res corporeas, alterum est genus rerum cogitantium: in iis autem potentiam inesse corpora movendi, propria experientia didicimus, quandoquidem anima nostra pro lubitu possit ciere et sistere membrorum motus, quacunque tandem ratione id fiat. Hoc certe constat, corpora moveri ad nutum animæ, eamque proinde haud inepte dici posse principium motus; particulare quidem et subordinatum, quodque ipsum dependeat a primo et universali principio.

26. Corpora gravia feruntur deorsum, etsi nullo impulsu apparente agitata; non tamen existimandum propterea in iis contineri principium motus: cujus rei hanc rationem assignat Aristoteles, "Gravia et levia (inquit),

Digitized by Google

non moventur a seipsis; id enim vitale esset, et se sistere possent." Gravia omnia una eademque certa et constanti lege centrum telluris petunt, neque in ipsis animadvertitur principium vel facultas ulla motum istum sistendi, minuendi, vel, nisi pro rata proportione, augendi, aut denique ullo modo immutandi: habent adeo se passive. Porro idem, stricte et accurate loquendo, dicendum de corporibus percussivis. Corpora ista quamdiu moventur, ut et in ipso percussionis momento, se gerunt passive, perinde scilicet atque cum quiescunt. Corpus iners tam agit quam corpus motum, si res ad verum exigatur: id quod agnoscit Newtonus, ubi ait, vim inertiæ esse eandem cum impetu. Corpus autem iners et quietum nihil agit, ergo nec motum.

27. Revera corpus æque perseverat in utrovis statu, vel motus vel quietis. Ista vero perseverantia non magis dicenda est actio corporis, quam existentia ejusdem actio diceretur. Perseverantia nihil aliud est quam continuatio in eodem modo existendi, quæ proprie dici actio non potest. Cæterum resistentiam, quam experimur in sistendo corpore moto, ejus actionem esse fingimus vana specie delusi. Revera enim ista resistentia quam sentimus, passio est in nobis, neque arguit corpus agere, sed nos pati: constat utique nos idem passuros fuisse, sive corpus illud a se moveatur, sive ab alio principio impellatur.

28. Actio et reactio dicuntur esse in corporibus: nec incommode ad demonstrationes mechanicas. Sed cavendum, ne propterea supponamus virtutem aliquam realem, quæ motus causa sive principium sit, esse in iis. Etenim voces illæ eodem modo intelligendæ sunt ac vox *attractio*: et quemadmodum hæc est hypothesis solummodo mathematica, non autem qualitas physica; idem etiam de illis intelligi debet, et ob eandem rationem. Nam sicut veritas et usus theorematum de mutua corporum attractione in philosophia mechanica stabiles manent, utpote unice fundati in motu corporum, sive

Digitized by Google

motus iste causari supponatur per actionem corporum se mutuo attrahentium, sive per actionem agentis alicujus a corporibus diversi impellentis et moderantis corpora; pari ratione, quæcunque tradita sunt de regulis et legibus motuum, simul ac theoremata inde deducta, manent inconcussa, dum modo concedantur effectus sensibilis, et ratiocinia iis innixa; sive supponamus actionem ipsam, aut vim horum effectuum causatricem, esse in corpore, sive in agente incorporeo.

29. Auferantur ex idea corporis extensio, soliditas, figura, remanebit nihil. Sed qualitates istæ sunt ad motum indifferentes, nec in se quidquam habent, quod motus principium dici possit. Hoc ex ipsis ideis nostris perspicuum est. Si igitur voce *corpus* significatur id quod concipimus, plane constat inde non peti posse principium motus: pars scilicet nulla aut attributum illius causa efficiens vera est, quæ motum producat. Vocem autem proferre, et nihil concipere, id demum indignum esset philosopho.

30. Datur res cogitans, activa, quam principium motus esse in nobis experimur. Hanc *animam, mentem, spiritum* dicimus. Datur etiam res extensa, iners, impenetrabilis, mobilis, quæ a priori toto cœlo differt, novumque genus constituit. Quantum intersit inter res cogitantes et extensas, primus omnium deprehendens Anaxagoras vir longe sapientissimus, asserebat mentem nihil habere cum corporibus commune, id quod constat ex primo libro Aristotelis de anima. Ex neotericis idem optime animadvertit Cartesius. Ab eo alii rem satis claram vocibus obscuris impeditam ac difficilem reddiderunt.

31. Ex dictis manifestum est eos qui vim activam, actionem, motus principium, in corporibus revera inesse affirmant, sententiam nulla experientia fundatam amplecti, eamque terminis obsuris et generalibus adstruere, nec quid sibi velint satis intelligere. E contrario, qui mentem esse principium motus volunt, sententiam pro-

Digitized by Google

pria experientia munitam proferunt, hominumque omni ævo doctissimorum suffragiis comprobatam.

32. Primus Anaxagoras τὸν νοῦν introduxit, qui motum inerti materiæ imprimeret: quam quidem sententiam probat etiam Aristoteles, plurimusque confirmat, aperte pronuncians primum movens esse immobile, indivisibile, et nullam habens magnitudinem. Dicere autem, omne motivum esse mobile, recte animadvertit idem esse ac siquis diceret, omne ædificativum esse ædificabile, Physic. lib. viii. Plato insuper in Timæo tradit machinam hanc corpoream, seu mundum visibilem agitari et animari a mente, quæ sensum omnem fugiat. Quinetiam hodie philosophi Cartesiani principium motuum naturalium Deum agnoscunt. Et Newtonus passim nec obscure innuit, non solummodo motum ab initio a numine profectum esse, verum adhuc systema mundanum ab eodem actu moveri. Hoc sacris literis consonum est: hoc scholasticorum calculo comprobatur. Nam etsi Peripatetici naturam tradant esse principium motus et quietis, interpretantur tamen naturam naturantem esse Deum. Intelligunt nimirum corpora omnia systematis hujusce mundani a mente præpotenti juxta certam et constantem rationem moveri.

33. Cæterum qui principium vitale corporibus tribuunt, obscurum aliquid et rebus parum conveniens fingunt. Quid enim aliud est vitali principio præditum esse quam vivere? aut vivere quam se movere, sistere, et statum suum mutare? Philosophi autem hujus sæculi doctissimi pro principio indubitato ponunt, omne corpus perseverare in statu suo, vel quietis vel motus uniformis in directum, nisi quatenus aliunde cogitur statum illum mutare: e contrario, in anima sentimus esse facultatem tam statum suum quam aliarum rerum mutandi; id quod proprie dicitur vitale, animamque a corporibus longe discriminat.

34. Motum et quietem in corporibus recentiores considerant velut duos status existendi, in quorum utro-

Digitized by Google

vis corpus omne sua natura iners permaneret, nulla vi externa urgente. Unde colligere licet, eandem esse causam motus et quietis, quæ est existentiæ corporum. Neque enim quærenda videtur alia causa existentiæ corporis successivæ in diversis partibus spatii, quam illa unde derivatur existentia ejusdem corporis successiva in diversis partibus temporis. De Deo autem Opt. Max. rerum omnium conditore et conservatore tractare, et qua ratione res cunctæ a summo et vero Ente pendeant demonstrare, quamvis pars sit scientiæ humanæ præcellentissima, spectat tamen potius ad philosophiam primam seu metaphysicam et theologiam, quam ad philosophiam naturalem, quæ hodie fere omnis continetur in experimentis et mechanica. Itaque cognitionem de Deo vel supponit philosophia naturalis, vel mutuatur ab aliqua scientia superiori. Quanquam verissimum sit, naturæ investigationem scientiis altioribus argumenta egregia ad sapientiam, bonitatem, et potentiam Dei illustrandam et probandam undequaque subministrare.

35. Quod hæc minus intelligantur, in causa est, cur nonnulli immerito repudient physicæ principia mathematica, eo scilicet nomine quod illa causas rerum efficientes non assignant: quum tamen revera ad physicam aut mechanicam spectet regulas solummodo, non causas efficientes, impulsionum attractionumve, et ut verbo dicam, motuum leges tradere; ex iis vero positis phænomenon particularium solutionem, non autem causam efficientem assignare.

36. Multum intererit considerasse quid proprie sit principium, et quo sensu intelligenda sit vox illa apud philosophos. Causa quidem vera efficiens et conservatrix rerum omnium jure optimo appellatur fons et principium earundem. Principia vero philosophiæ experimentalis proprie dicenda sunt fundamenta quibus illa innititur, seu fontes unde derivatur, (non dico existentia, sed) cognitio rerum corporearum, sensus utique et experientia. Similiter, in philosophia mechanica, prin-

Digitized by Google

cipia dicenda sunt, in quibus fundatur et continetur universa disciplina, leges illæ motuum primariæ, quæ experimentis comprobatæ, ratiocinio etiam excultæ sunt et redditæ universales. Hæ motuum leges commode dicuntur principia, quoniam ab iis tam theoremata mechanica generalia quam particulares τῶν φαινομένων explicationes derivantur.

37. Tum nimirum dici potest quidpiam explicari mechanice, cum reducitur ad ista principia simplicissima et universalissima, et per accuratum ratiocinium, cum iis consentaneum et connexum esse ostenditur. Nam inventis semel naturæ legibus, deinceps monstrandum est philosopho, ex constanti harum legum observatione, hoc est, ex iis principiis phænomenon quodvis necessario consequi: id quod est phænomena explicare et solvere, causamque, id est rationem cur fiant, assignare.

38. Mens humana gaudet scientiam suam extendere et dilatare. Ad hoc autem notiones et propositiones generales efformandæ sunt, in quibus quodam modo continentur propositiones et cognitiones particulares, quæ tum demum intelligi creduntur cum ex primis illis continuo nexu deducuntur. Hoc geometris notissimum est. In mechanica etiam præmittuntur notiones, hoc est definitiones, et enunciationes de motu primæ et generales, ex quibus postmodum methodo mathematica conclusiones magis remotæ et minus generales colliguntur. Et sicut per applicationem theorematum geometricorum, corporum particularium magnitudines mensurantur; ita etiam per applicationem theorematum mechanices universalium, systematis mundani partium quarumvis motus, et phænomena inde pendentia, innotescunt et determinantur: ad quem scopum unice collineandum physico.

39. Et quemadmodum geometræ disciplinæ causa multa comminiscuntur, quæ nec ipsi describere possunt, nec in rerum natura invenire; simili prorsus ratione mechanicus voces quasdam abstractas et generales adhibet,

Digitized by Google

fingitque in corporibus vim, actionem, attractionem, solicitationem, &c. quæ ad theorias et enunciationes, ut et computationes de motu apprime utiles sunt, etiamsi in ipsa rerum veritate et corporibus actu existentibus frustra quæererentur, non minus quam quæ a geometris per abstractionem mathematicam finguntur.

40. Revera ope sensuum nil nisi effectus seu qualitates sensibiles, et res corporeas omnino passivas, sive in motu sint sive in quiete, percipimus: ratioque et experientia activum nihil præter mentem aut animam esse suadet. Quicquid ultra fingitur, id ejusdem generis esse cum aliis hypothesibus et abstractionibus mathematicis existimandum: quod penitus animo infigere oportet. Hoc ni fiat, facile in obscuram scholasticorum subtilitatem, quæ per tot sæcula, tanquam dira quædam pestis, philosophiam corrupit, relabi possumus.

41. Principia mechanica legesque motuum aut naturæ universales, sæculo ultimo feliciter inventæ, et subsidio geometriæ tractatæ et applicatæ, miram lucem in philosophiam intulerunt. Principia vero metaphysica causæque reales efficientes motus et existentiæ corporum attributorumve corporeorum nullo modo ad mechanicam aut experimenta pertinent, neque eis lucem dare possunt, nisi quatenus, velut præcognita inserviant ad limites physicæ præfiniendos, eaque ratione ad tollendas difficultates quæstionesque peregrinas.

42. Qui a spiritibus motus principium petunt, ii vel rem corpoream vel incorpoream voce *spiritus* intelligunt: si rem corpoream, quantumvis tenuem, tamen redit difficultas: si incorpoream, quantumvis id verum sit, attamen ad physicam non proprie pertinet. Quod si quis philosophiam naturalem ultra limites experimentorum et mechanicæ extenderit, ita ut rerum etiam incorporearum, et inextensarum cognitionem complectatur; latior quidem illa vocis acceptio tractationem de anima, mente, seu principio vitali admittit. Cæterum commodius erit, juxta usum jam fere receptum, ita distinguere

Digitized by Google

inter scientias, ut singulæ propriis circumscribantur cancellis, et philosophus naturalis totus sit in experimentis, legibusque motuum, et principiis mechanicis, indeque depromptis ratiociniis; quidquid autem de aliis rebus protulerit, id superiori alicui scientiæ acceptum referat. Etenim ex cognitis naturæ legibus pulcherrimæ theoriæ, praxes etiam mechanicæ ad vitam utiles consequuntur. Ex cognitione autem ipsius naturæ auctoris considerationes, longe præstantissimæ quidem illæ, sed metaphysicæ, theologicæ, morales oriuntur.

43. De principiis hactenus: nunc dicendum de natura motus. Atque is quidem, cum sensibus clare percipiatur, non tam natura sua, quam doctis philosophorum commentis obscuratus est. Motus nunquam in sensus nostros incurrit sine mole corporea, spatio, et tempore. Sunt tamen qui motum, tanquam ideam quandam simplicem et abstractam, atque ab omnibus aliis rebus sejunctam, contemplari student. Verum idea illa tenuissima et subtilissima intellectus aciem eludit: id quod quilibet secum meditando experiri potest. Hinc nascuntur magnæ difficultates de natura motus, et definitiones, ipsa re quam illustrare debent, longe obscuriores. Hujusmodi sunt definitiones illæ Aristotelis et Scholasticorum, qui motum dicunt esse *actum mobilis quatenus est mobile, vel actum entis in potentia quatenus in potentia.* Hujusmodi etiam est illud viri inter recentiores celebris, qui asserit *nihil in motu esse reale: præter momentaneum illud quod in vi ad mutationem nitente constitui debet.* Porro constat, horum et similium definitionum auctores in animo habuisse abstractam motus naturam, seclusa omni temporis et spatii consideratione, explicare; sed qua ratione abstracta illa motus quintessentia (ut ita dicam) intelligi possit, non video.

44. Neque hoc contenti, ulterius pergunt, partesque ipsius motus a se invicem dividunt et secernunt, quarum ideas distinctas, tanquam entium revera distinctorum, efformare conantur. Etenim sunt qui motionem a motu

Digitized by Google

distinguant, illam velut instantaneum motus elementum spectantes. Velocitatem insuper, conatum, vim, impetum totidem res essentia diversas esse volunt, quarum quæque per propriam atque ab aliis omnibus segregatam et abstractam ideam intellectui objiciatur. Sed in hisce rebus discutiendis, stantibus iis quæ supra disseruimus, non est cur diutius immoremur.

45. Multi etiam per *transitum* motum definiunt, obliti scilicet transitum ipsum sine motu intelligi non posse, et per motum definiri oportere. Verissimum adeo est definitiones, sicut nonnullis rebus lucem, ita vicissim aliis tenebras afferre. Et profecto, quascumque res sensu percipimus, eas clariores aut notiores definiendo efficere vix quisquam potuerit. Cujus rei vana spe allecti res faciles difficillimas reddiderunt philosophi, mentesque suas difficultatibus, quas ut plurimum ipsi peperissent, implicavere. Ex hocce definiendi, simulac abstrahendi studio, multæ tam de motu quam de aliis rebus natæ subtilissimæ quæstiones, eædemque nullius utilitatis, hominum ingenia frustra torserunt, adeo ut Aristoteles ultro et sæpius fateatur motum esse *actum quendam cognitu difficilem*, et nonnulli ex veteribus usque eo nugis exercitati deveniebant, ut motum omnino esse negarent.

46. Sed hujusmodi minutiis distineri piget. Satis sit fontes solutionum indicasse: ad quos etiam illud adjungere libet: quod ea quæ de infinita divisione temporis et spatii in mathesi traduntur, ob congenitam rerum naturam paradoxa et theorias spinosas (quales sunt illæ omnes in quibus agitur de infinito) in speculationes de motu intulerunt. Quidquid autem hujus generis sit, id omne motus commune habet cum spatio et tempore, vel potius ad ea refert acceptum.

47. Et quemadmodum ex una parte nimia abstractio seu divisio rerum vere inseparabilium, ita ab altera parte compositio seu potius confusio rerum diversissimarum motus naturam perplexam reddidit. Usitatum enim est

Digitized by Google

motum cum causa motus efficiente confundere. Unde accidit ut motus sit quasi biformis, unam faciem sensibus obviam, alteram caliginosa nocte obvolutam habens. Inde obscuritas et confusio, et varia de motu paradoxa originem trahunt, dum effectui perperam tribuitur id quod revera causæ solummodo competit.

48. Hinc oritur opinio illa, eandem semper motus quantitatem conservari; quod, nisi intelligatur de vi et potentia causæ, sive causa illa dicatur natura, sive νοῦς, vel quodcunque tandem agens sit, falsum esse cuivis facile constabit. Aristoteles quidem l. 8. physicorum, ubi quærit *utrum motus factus sit et corruptus, an vero ab æterno tanquam vita immortalis insit rebus omnibus*, vitale principium potius, quam effectum externum, sive mutationem loci intellexisse videtur.

49. Hinc etiam est, quod multi suspicantur motum non esse meram passionem in corporibus. Quod si intelligamus id quod in motu corporis sensibus objicitur, quin omnino passivum sit nemo dubitare potest. Ecquid enim in se habet successiva corporis existentia in diversis locis, quod actionem referat, aut aliud sit quam nudus et iners effectus?

50. Peripatetici, qui dicunt motum esse actum unum utriusque, moventis et moti, non satis discriminant causam ab effectu. Similiter, qui nisum aut conatum in motu fingunt, aut idem corpus simul in contrarias partes ferri putant, eadem idearum confusione, eadem vocum ambiguitate ludificari videntur.

51. Juvat multum, sicut in aliis omnibus, ita in scientia de motu accuratam diligentiam adhibere, tam ad aliorum conceptus intelligendos quam ad suos enunciandos: in qua re nisi peccatum esset, vix credo in disputationem trahi potuisse, utrum corpus indifferens sit ad motum et ad quietem, necne. Quoniam enim experientia constat, esse legem naturæ primariam, ut corpus perinde perseveret in *statu motus ac quietis, quamdiu aliunde nihil accidat ad statum istum mutandum*; et prop-

Digitized by Google

tenea vim inertiæ sub diverso respectu esse vel resistentiam, vel impetum, colligitur: hoc sensu profecto corpus dici potest sua natura indifferens ad motum vel quietem. Nimirum tam difficile est quietem in corpus motum, quam motum in quiescens inducere: cum vero corpus pariter conservet statum utrumvis, quidni dicatur ad utrumvis se habere indifferenter?

52. Peripatetici pro varietate mutationum, quas res aliqua subire potest, varia motus genera distinguebant. Hodie de motu agentes intelligunt solummodo motum localem. Motus autem localis intelligi nequit nisi simul intelligatur quid sit *locus*: is vero a neotericis definitur *pars spatii quam corpus occupat*: unde dividitur in relativum et absolutum pro ratione spatii. Distinguunt enim inter spatium absolutum sive verum, ac relativum sive apparens. Volunt scilicet dari spatium undequaque immensum, immobile, insensibile, corpora universa permeans et continens, quod vocant spatium absolutum. Spatium autem a corporibus comprehensum vel definitum, sensibusque adeo subjectum, dicitur spatium relativum, apparens, vulgare.

53. Fingamus itaque corpora cuncta destrui, et in nihilum redigi. Quod reliquum est vocant spatium absolutum, omni relatione quæ a situ et distantiis corporum oriebatur, simul cum ipsis corporibus, sublata. Porro spatium illud est infinitum, immobile, indivisibile, insensibile, sine relatione et sine distinctione! Hoc est, omnia ejus attributa sunt privativa vel negativa: videtur igitur esse merum nihil. Parit solummodo difficultatem aliquam quod extensum sit. Extensio autem est qualitas positiva. Verum qualis tandem extensio est illa, quæ nec dividi potest, nec mensurari, cujus nullam partem, nec sensu percipere, nec imaginatione depingere possumus? Etenim nihil in imaginationem cadit, quod, ex natura rei, non possibile est ut sensu percipiatur; siquidem imaginatio nihil aliud est quam facultas representatrix rerum sensibilium, vel actu existentium, vel saltem

Digitized by Google

possibilium. Fugit insuper intellectum purum, quum facultas illa versetur tantum circa res spirituales et inextensas, cujusmodi sunt mentes nostræ, earumque habitus, passiones, virtutes, et simília. Ex spatio igitur absoluto auferamus modo vocabula, et nihil remanebit in sensu, imaginatione, aut intellectu: nihil aliud ergo iis designatur, quam pura privatio aut negatio, hoc est, merum nihil.

54. Confitendum omnino est nos circa hanc rem gravissimis præjudiciis teneri, a quibus ut liberemur, omnis animi vis exerenda. Etenim multi, tantum abest quod spatium absolutum pro nihilo ducant, ut rem esse ex omnibus (Deo excepto) unicam existiment, quæ annihilari non possit: statuantque illud suapte natura necessario existere, æternumque esse et increatum, atque adeo attributorum divinorum particeps. Verum enimvero quum certissimum sit, res omnes, quas nominibus designamus, per qualitates aut relationes, vel aliqua saltem ex parte, cognosci (ineptum enim foret vocabulis uti quibus cogniti nihil, nihil notionis, ideæ vel conceptus subjiceretur), inquiramus diligenter, utrum formare liceat ideam ullam spatii illius puri, realis, absoluti, quod post omnium corporum annihilationem perseveret existere. Ideam porro talem paulo acrius intuens, reperio ideam esse nihili purissimam, si modo idea appellanda sit. Hoc ipse summa adhibita diligentia expertus sum: hoc alios pari adhibita diligentia experturos reor.

55. Decipere nos nonnunquam solet, quod aliis omnibus corporibus imaginatione sublatis, nostrum tamen manere supponimus. Quo supposito, motum membrorum ab omni parte liberrimum imaginamur. Motus autem sine spatio concipi non potest. Nihilominus si rem attento animo recolamus, constabit primo concipi spatium relativum partibus nostri corporis definitum: 2°. movendi membra potestatem liberrimam nullo obstaculo retusam: et præter hæc duo nihil. Falso tamen credimus tertium aliquod, spatium videlicet immensum, rea-

Digitized by Google

liter existere, quod liberam potestatem nobis faciat movendi corpus nostrum : ad hoc enim requiritur absentia solummodo aliorum corporum. Quam absentiam, sive privationem corporum, nihil esse positivum fateamur necesse est.*

56. Cæterum hasce res nisi quis libero et acri examine perspexerit, verba et voces parum valent. Meditanti vero, et rationes secum reputanti, ni fallor, manifestum erit, quæcunque de spatio puro et absoluto prædicantur, ea omnia de nihilo prædicari posse Qua ratione mens humana facillime liberatur a magnis difficultatibus, simulque ab ea absurditate tribuendi existentiam necessariam ulli rei præterquam soli Deo optimo maximo.

57. In proclivi esset sententiam nostram argumentis a posteriori (ut loquuntur) ductis confirmare, quæstiones de spatio absoluto proponendo; exempli gratia, utrum sit substantia vel accidens? utrum creatum vel increatum? et absurditates ex utravis parte consequentes demonstrando. Sed brevitati consulendum. Illud tamen omitti non debet, quod sententiam hancce Democritus olim calculo suo comprobavit, uti auctor est Aristoteles l. i. Phys. ubi hæc habet: *Democritus solidum et inane ponit principia, quorum aliud quidem ut quod est, aliud ut quod non est esse dicit.* Scrupulum si forte injiciat, quod distinctio illa inter spatium absolutum et relativum a magni nominis philosophis usurpetur, eique quasi fundamento inædificentur multa præclara theoremata, scrupulum istum vanum esse, ex iis quæ secutura sunt, apparebit.

58. Ex præmissis patet, non convenire, ut definiamus locum verum corporis esse partem spatii absoluti quam occupat corpus, motumque verum seu absolutum esse mutationem loci veri et absoluti. Siquidem omnis

* Vide quæ contra spatium absolutum disseruntur in libro de principiis cognitionis humanæ, idiomate anglicano decem abhinc annis edito.

Digitized by Google

locus est relativus, ut et omnis motus. Veruntamen ut hoc clarius appareat, animadvertendum est, motum nullum intelligi posse sine determinatione aliqua seu directione, quæ quidem intelligi nequit, nisi præter corpus motum, nostrum etiam corpus, aut aliud aliquod, simul intelligatur existere. Nam sursum, deorsum, sinistrorsum, dextrorsum, omnesque plagæ et regiones in relatione aliqua fundantur, et necessario corpus a moto diversum connotant et supponunt. Adeo ut, si reliquis corporibus in nihilum redactis, globus, exempli gratia, unicus existere supponatur; in illo motus nullus concipi possit: usque adeo necesse est, ut detur aliud corpus, cujus situ motus determinari intelligatur. Hujus sententiæ veritas clarissime elucebit, modo corporum omnium tam nostri quam aliorum, præter globum istum unicum, annihilationem recte supposuerimus.

59. Concipiantur porro duo globi, et præterea nil corporeum, existere. Concipiantur deinde vires quomodocunque applicari: quicquid tandem per applicationem virium intelligamus, motus circularis duorum globorum circa commune centrum nequit per imaginationem concipi. Supponamus deinde cœlum fixarum creari: subito ex concepto appulsu globorum ad diversas cœli istius partes motus concipietur. Scilicet cum motus natura sua sit relativus, concipi non potuit priusquam darentur corpora correlata. Quemadmodum nec ulla relatio alia sine correlatis concipi potest.

60. Ad motum circularem quod attinet, putant multi, crescente motu vero circulari, corpus necessario magis semper magisque ab axe niti. Hoc autem ex eo provenit, quod, cum motus circularis spectari possit tanquam in omni momento a duabus directionibus ortum trahens, una secundum radium, altera secundum tangentem; si in hac ultima tantum directione impetus augeatur, tum a centro recedet corpus motum, orbita vero desinet esse circularis. Quod si æqualiter augeantur vires in utraque directione, manebit motus circularis, sed

Digitized by Google

acceleratus conatu, qui non magis arguet vires recedendi ab axe, quam accedendi ad eundem, auctas esse. Dicendum igitur, aquam in situla circumactam ascendere ad latera vasis, propterea quod, applicatis novis viribus in directione tangentis ad quamvis particulam aquæ, eodem instanti non applicentur novæ vires æquales centripetæ. Ex quo experimento nullo modo sequitur, motum absolutum circularem per vires recedendi ab axe motus necessario dignosci. Porro qua ratione intelligendæ sunt voces istæ, *vires corporum et conatus*, ex præmissis satis superque innotescit.

61. Quo modo curva considerari potest tanquam constans ex rectis infinitis, etiamsi revera ex illis non constet, sed quod ea hypothesis ad geometriam utilis sit, eodem modo motus circularis spectari potest tanquam a directionibus rectilineis infinitis ortum ducens, quæ suppositio utilis est in philosophia mechanica. Non tamen ideo affirmandum, impossibile esse, ut centrum gravitatis corporis cujusvis successive existat in singulis punctis peripheriæ circularis, nulla ratione habita directionis ullius rectilineæ, sive in tangente sive in radio.

62. Haud omittendum est, motum lapidis in funda, aut aquæ in situla circumacta, dici non posse motum vere circularem, juxta mentem eorum qui per partes spatii absoluti definiunt loca vera corporum; cum sit mire compositus ex motibus non solum situlæ vel fundæ, sed etiam telluris diurno circa proprium axem, menstruo circa commune centrum gravitatis terræ et lunæ, et annuo circa solem: et propterea particula quævis lapidis vel aquæ describat lineam a circulari longe abhorrentem. Neque revera est, qui creditur, conatus axifugus, quoniam non respicit unum aliquem axem ratione spatii absoluti, supposito quod detur tale spatium: proinde non video quomodo appellari possit conatus unicus, cui motus vere circularis tanquam proprio et adæquato effectui respondet.

63. Motus nullus dignosci potest, aut mensurari,

Digitized by Google

nisi per res sensibiles. Cum ergo spatium absolutum nullo modo in sensus incurrat, necesse est ut inutile prorsus sit ad distinctionem motuum. Præterea determinatio sive directio motui essentialis est, illa vero in relatione consistit. Ergo impossibile est ut motus absolutus concipiatur.

64. Porro quoniam pro diversitate loci relativi varius sit motus ejusdem corporis, quinimo uno respectu moveri, altero quiescere dici quidpiam possit; ad determinandum motum verum et quietem veram, quo scilicet tollatur ambiguitas, et consulatur mechanicæ philosophorum, qui systema rerum latius contemplantur, satis fuerit spatium relativum fixarum cœlo, tanquam quiescente spectato, conclusum adhibere, loco spatii absoluti. Motus autem et quies tali spatio relativo definiti, commode adhiberi possunt loco absolutorum, qui ab illis nullo symptomate discerni possunt. Etenim imprimantur utcunque vires, sint quicunque conatus, concedamus motum distingui per actiones in corpora exercitas; nunquam tamen inde sequetur, dari spatium illud et locum absolutum, ejusque mutationem esse locum verum.

65. Leges motuum, effectusque, et theoremata eorundem proportiones et calculos continentia, pro diversis viarum figuris, accelerationibus itidem et directionibus diversis, mediisque plus minusve resistentibus, hæc omnia constant sine calculatione motus absoluti. Uti vel ex eo patet quod, quum secundum illorum principia qui motum absolutum inducunt, nullo symptomate scire liceat, utrum integra rerum compages quiescat, an moveatur uniformiter in directum, perspicuum sit motum absolutum nullius corporis cognosci posse.

66. Ex dictis patet ad veram motus naturam perspiciendam summopere juvaturum, 1°. Distinguere inter hypotheses mathematicas et naturas rerum: 2°. Cavere ab abstractionibus: 3°. Considerare motum tanquam aliquid sensibile, vel saltem imaginabile; mensurisque

Digitized by Google

relativis esse contentos. Quæ si fecerimus, simul clarissima quæque philosophiæ mechanicæ theoremata, quibus reserantur naturæ recessus, mundique systema calculis humanis subjicitur, manebunt intemerata; et motus contemplatio a mille minutiis, subtilitatibus, ideisque abstractis libera evadet. Atque hæc de natura motus dicta sufficiant.

67. Restat, ut disseramus de causa communicationis motuum. Esse autem vim impressam in corpus mobile causam motus in eo, plerique existimant. Veruntamen illos non assignare causam motus cognitam, et a corpore motuque distinctam, ex præmissis constat. Patet insuper vim non esse rem certam et determinatam, ex eo quod viri summi de illa multum diversa, immo contraria, proferant, salva tamen in consequentiis veritate. Siquidem Newtonus ait vim impressam consistere in actione sola, esseque actionem exercitam in corpus ad statum ejus mutandum, nec post actionem manere. Torricellius cumulum quendam sive aggregatum virium impressarum per percussionem in corpus mobile recipi, ibidemque manere atque impetum constituere contendit. Idem fere Borellus aliique prædicant. At vero, tametsi inter se pugnare videantur Newtonus et Torricellius, nihilominus, dum singuli sibi consentanea proferunt, res satis commode ab utrisque explicatur. Quippe vires omnes corporibus attributæ tam sunt hypotheses mathematicæ quam vires attractivæ in planetis et sole. Cæterum entia mathematica in rerum natura stabilem essentiam non habent: pendent autem a notione definientis: unde eadem res diversimode explicari potest.

68. Statuamus motum novum in corpore percusso conservari, sive per vim insitam, qua corpus quodlibet perseverat in statu suo vel motus vel quietis uniformis in directum; sive per vim impressam, durante percussione in corpus percussum receptam ibidemque permanentem; idem erit quoad rem, differentia existente in nominibus tantum. Similiter, ubi mobile percutiens

Digitized by Google

perdit, et percussum acquirit motum, parum refert disputare, utrum motus acquisitus sit idem numero cum motu perdito, ducit enim in minutias metaphysicas et prorsus nominales de identitate. Itaque sive dicamus motum transire a percutiente in percussum, sive in percusso motum de novo generari, destrui autem in percutiente, res eodem recidit. Utrobique intelligitur unum corpus motum perdere, alterum acquirere, et præterea nihil.

69. Mentem, quæ agitat et continet universam hancce molem corpoream, estque causa vera efficiens motus, eandem esse, proprie et stricte loquendo, causam communicationis ejusdem haud negaverim. In philosophia tamen physica, causas et solutiones phænomenon a principiis mechanicis petere oportet. Physice igitur res explicatur non assignando ejus causam vere agentem et incorpoream, sed demonstrando ejus connexionem cum principiis mechanicis: cujusmodi est illud, *actionem et reactionem esse semper contrarias et æquales*, a quo, tanquam fonte et principio primario, eruuntur regulæ de motuum communicatione, quæ a neotericis, magno scientiarum bono, jam ante repertæ sunt et demonstratæ.

70. Nobis satis fuerit, si innuamus principium illud alio modo declarari potuisse. Nam si vera rerum natura potius quam abstracta mathesis spectetur, videbitur rectius dici, in attractione vel percussione passionem corporum, quam actionem, esse utrobique æqualem. Exempli gratia, lapis fune equo alligatus tantum trahitur versus equum, quantum equus versus lapidem: corpus etiam motum in aliud quiescens impactum, patitur eandem mutationem cum corpore quiescente. Et quoad effectum realem, percutiens est item percussum, percussumque percutiens. Mutatio autem illa est utrobique, tam in corpore equi quam in lapide, tam in moto quam in quiescente, passio mera. Esse autem vim, virtutem, aut actionem corpoream talium effectuum vere et pro-

Digitized by Google

prie causatricem non constat. Corpus motum in quiescens impingitur; loquimur tamen active, dicentes illud hoc impellere: nec absurde in mechanicis, ubi ideæ mathematicæ potius quam veræ rerum naturæ spectantur.

71. In physica, sensus et experientia, quæ ad effectus apparentes solummodo pertingunt, locum habent; in mechanica, notiones abstractæ mathematicorum admittuntur. In philosophia prima, seu metaphysica, agitur de rebus incorporeis, de causis, veritate, et existentia rerum. Physicus series sive successiones rerum sensibilium contemplatur, quibus legibus connectuntur, et quo ordine, quid præcedit tanquam causa, quid sequitur tanquam effectus, animadvertens. Atque hac ratione dicimus corpus motum esse causam motus in altero, vel ei motum imprimere, trahere etiam, aut impellere. Quo sensu causæ secundæ corporeæ intelligi debent, nulla ratione habita veræ sedis virium, vel potentiarum actricum, aut causæ realis cui insunt. Porro dici possunt causæ vel principia mechanica, ultra corpus, figuram, motum, etiam axiomata scientiæ mechanicæ primaria, tanquam causæ consequentium spectata.

72. Causæ vere activæ meditatione tantum et ratiocinio e tenebris erui quibus involvuntur possunt, et aliquatenus cognosci. Spectat autem ad philosophiam primam, seu metaphysicam, de iis agere. Quod si cuique scientiæ provincia sua tribuatur, limites assignentur, principia et objecta accurate distinguantur, quæ ad singulas pertinent, tractare licuerit majore, cum facilitate, tum perspicuitate.

Digitized by Google

THE

ANALYST:

OR, A

DISCOURSE

ADDRESSED TO AN

INFIDEL MATHEMATICIAN:

WHEREIN

IT IS EXAMINED WHETHER THE OBJECT, PRINCIPLES, AND INFERENCES, OF THE MODERN ANALYSIS ARE MORE DISTINCTLY CONCEIVED, OR MORE EVIDENTLY DEDUCED, THAN RELIGIOUS MYSTERIES AND POINTS OF FAITH.

Digitized by Google

Digitized by Google

CONTENTS.

SECT. I. Mathematicians presumed to be the great masters of reason. Hence an undue deference to their decisions where they have no right to decide. This one cause of infidelity.

II. Their principles and methods to be examined with the same freedom which they assume with regard to the principles and mysteries of religion. In what sense and how far geometry is to be allowed an improvement of the mind.

III. Fluxions the great object and employment of the profound geometricans in the present age. What these fluxions are.

IV. Moments or nascent increments of flowing quantities difficult to conceive. Fluxions of different orders. Second and third fluxions obscure mysteries.

V. Differences, *i. e.* increments or decrements infinitely small, used by foreign mathematicians instead of fluxions or velocities of nascent and evanescent increments.

VI. Differences of various orders, *i. e.* quantities infinitely less than quantities infinitely little; and infinitesimal parts of infinitesimals of infinitesimals, &c. without end or limit.

VII. Mysteries in faith unjustly objected against by those who admit them in science.

VIII. Modern analysts supposed by themselves to extend their views even beyond infinity: deluded by their own species or symbols.

IX. Method for finding the fluxions of a rectangle of two indeterminate quantities, shewed to be illegitimate and false.

X. Implicit deference of mathematical men for the great author of fluxions. Their earnestness rather to go on fast and far, than to set out warily and see their way distinctly.

XI. Momentums difficult to comprehend. No middle quantity to be admitted between a finite quantity and nothing, without admitting infinitesimals.

XII. The fluxion of any power of a flowing quantity. Lemma premised in order to examine the method for finding such fluxion.

Digitized by Google

XIII. The rule for the fluxions of powers attained by unfair reasoning.

XIV. The aforesaid reasoning farther unfolded, and shewed to be illogical.

XV. No true conclusion to be justly drawn by direct consequence from inconsistent suppositions. The same rules of right reason to be observed, whether men argue in symbols or in words.

XVI. An hypothesis being destroyed, no consequence of such hypothesis to be retained.

XVII. Hard to distinguish between evanescent increments and infinitesimal differences. Fluxions placed in various lights. The great author, it seems, not satisfied with his own notions.

XVIII. Quantities infinitely small supposed and rejected by Leibnitz and his followers. No quantity, according to them, greater or smaller for the addition or subduction of its infinitesimal.

XIX. Conclusions to be proved by the principles, and not principles by the conclusions.

XX. The geometrical analyst considered as a logician; and his discoveries, not in themselves, but as derived from such principles and by such inferences.

XXI. A tangent drawn to the parabola according to the *calculus differentialis*. Truth shewn to be the result of error, and how.

XXII. By virtue of a twofold mistake analysts arrive at truth, but not at science: ignorant how they come at their own conclusions.

XXIII. The conclusion never evident or accurate, in virtue of obscure or inaccurate premises. Finite quantities might be rejected as well as infinitesimals.

XXIV. The foregoing doctrine farther illustrated.

XXV. Sundry observations thereupon.

XXVI. Ordinate found from the area by means of evanescent increments.

XXVII. In the foregoing case, the supposed evanescent increment is really a finite quantity, destroyed by an equal quantity with an opposite sign.

XXVIII. The foregoing case put generally. Algebraical expressions compared with geometrical quantities.

XXIX. Correspondent quantities algebraical and geometrical

Digitized by Google

equated. The analysis shewed not to obtain in infinitesimals, but it must also obtain in finite quantities.

XXX. The getting rid of quantities by the received principles, whether of fluxions or of differences, neither good geometry nor good logic. Fluxions or velocities, why introduced.

XXXI. Velocities not to be abstracted from time and space: nor their proportions to be investigated or considered exclusively of time and space.

XXXII. Difficult and obscure points constitute the principles of the modern analysis, and are the foundation on which it is built.

XXXIII. The rational faculties whether improved by such obscure analytics.

XXXIV. By what inconceivable steps finite lines are found proportional to fluxions. Mathematical infidels strain at a gnat and swallow a camel.

XXXV. Fluxions of infinitesimals not to be avoided on the received principles. Nice abstractions and geometrical metaphysics.

XXXVI. Velocities of nascent or evanescent quantities, whether in reality understood and signified by finite lines and species.

XXXVII. Signs or exponents obvious; but fluxions themselves not so.

XXXVIII. Fluxions, whether the velocities with which infinitesimal differences are generated.

XXXIX. Fluxions of fluxions or second fluxions, whether to be conceived as velocities of velocities, or rather as velocities of the second nascent increments.

XL. Fluxions considered, sometimes in one sense, sometimes in another; one while in themselves, another in their exponents: hence confusion and obscurity.

XLI. Isochronal increments, whether finite or nascent, proportional to their respective velocities.

XLII. Time supposed to be divided into moments: increments generated in those moments: and velocities proportional to those increments.

XLIII. Fluxions, second, third, fourth, &c. what they are, how obtained, and how represented. What idea of velocity in a moment of time and point of space.

XLIV. Fluxions of all orders inconceivable.

XLV. Signs or exponents confounded with the fluxions.

Digitized by Google

XLVI. Series of expressions or of notes easily contrived. Whether a series of mere velocities, or of mere nascent increments corresponding thereunto, be as easily conceived.

XLVII. Celerities dismissed, and instead thereof ordinates and areas introduced. Analogies and expressions useful in the modern quadratures, may yet be useless for enabling us to conceive fluxions. No right to apply the rules without knowledge of the principles.

XLVIII. Metaphysics of modern analysts most incomprehensible.

XLIX. Analysts employed about notional shadowy entities. Their logics as exceptionable as their metaphysics.

L. Occasion of this address. Conclusion. Queries.

Digitized by Google

THE

ANALYST.

I. THOUGH I am a stranger to your person, yet I am not, Sir, a stranger to the reputation you have acquired in that branch of learning which hath been your peculiar study; nor to the authority that you therefore assume in things foreign to your profession; nor to the abuse that you, and too many more of the like character, are known to make of such undue authority, to the misleading of unwary persons in matters of the highest concernment, and whereof your mathematical knowledge can by no means qualify you to be a competent judge. Equity indeed and good sense would incline one to disregard the judgment of men, in points which they have not considered or examined. But several who make the loudest claim to those qualities do nevertheless the very thing they would seem to despise, clothing themselves in the livery of other men's opinions, and putting on a general deference for the judgment of you, gentlemen, who are presumed to be of all men the greatest masters of reason, to be most conversant about distinct ideas, and never to take things upon trust, but always clearly to see your way, as men whose constant employment is the deducing truth by the justest inference from the most evident principles. With this bias on their minds, they submit to your decisions where you have no right to decide. And that this is one short way of making infidels, I am credibly informed.

II. Whereas then it is supposed, that you apprehend more distinctly, consider more closely, infer more justly,

Digitized by Google

and conclude more accurately, than other men, and that you are therefore less religious because more judicious, I shall claim the privilege of a free-thinker; and take the liberty to inquire into the object, principles, and method, of demonstration admitted by the mathematicians of the present age, with the same freedom that you presume to treat the principles and mysteries of religion; to the end, that all men may see what right you have to lead, or what encouragement others have to follow you. It hath been an old remark, that geometry is an excellent logic. And it must be owned, that when the definitions are clear; when the postulata cannot be refused, nor the axioms denied: when from the distinct contemplation and comparison of figures, their properties are derived, by a perpetual well-connected chain of consequences, the objects being still kept in view, and the attention ever fixed upon them; there is acquired a habit of reasoning, close and exact and methodical: which habit strengthens and sharpens the mind, and being transferred to other subjects, is of general use in the inquiry after truth. But how far this is the case of our geometrical analysts, it may be worth while to consider.

III. The method of fluxions is the general key by help whereof the modern mathematicians unlock the secrets of geometry, and consequently of nature. And as it is that which hath enabled them so remarkably to outgo the ancients in discovering theorems and solving problems, the exercise and application thereof are become the main if not sole employment of all those who in this age pass for profound geometers. But whether this method be clear or obscure, consistent or repugnant, demonstrative or precarious, as I shall inquire with the utmost impartiality, so I submit my inquiry to your own judgment, and that of every candid reader. Lines are supposed to be generated* by the motion of points, planes by the motion of lines, and solids by the motion

* Introd. ad Quadraturam Curvarum.

Digitized by Google

of planes. And whereas quantities generated in equal times are greater or lesser according to the greater or lesser velocity wherewith they increase and are generated, a method hath been found to determine quantities from the velocities of their generating motions. And such velocities are called fluxions: and the quantities generated are called flowing quantities. These fluxions are said to be nearly as the increments of the flowing quantities, generated in the least equal particles of time; and to be accurately in the first proportion of the nascent, or in the last of the evanescent increments. Sometimes, instead of velocities, the momentaneous increments or decrements of undetermined flowing quantities are considered, under the appellation of moments.

IV. By moments we are not to understand finite particles. These are said not to be moments, but quantities generated from moments, which last are only the nascent principles of finite quantities. It is said, that the minutest errors are not to be neglected in mathematics: that the fluxions are celerities, not proportional to the finite increments, though ever so small; but only to the moments or nascent increments, whereof the proportion alone, and not the magnitude, is considered. And of the aforesaid fluxions there be other fluxions, which fluxions of fluxions are called second fluxions. And the fluxions of these second fluxions are called third fluxions: and so on, fourth, fifth, sixth, &c. *ad infinitum*. Now, as our sense is strained and puzzled with the perception of objects extremely minute, even so the imagination, which faculty derives from sense, is very much strained and puzzled to frame clear ideas of the least particles of time, or the least increments generated therein: and much more so to comprehend the moments, or those increments of the flowing quantities in *statu nascenti*, in their very first origin or beginning to exist, before they become finite particles. And it seems still more difficult to conceive the abstracted

Digitized by Google

velocities of such nascent imperfect entities. But the velocities of the velocities, the second, third, fourth, and fifth velocities, &c. exceed, if I mistake not, all human understanding. The further the mind analyseth and pursueth these fugitive ideas, the more it is lost and bewildered; the objects, at first fleeting and minute, soon vanishing out of sight. Certainly, in any sense, a second or third fluxion seems an obscure mystery. The incipient celerity of an incipient celerity, the nascent augment of a nascent augment, *i. e.* of a thing which hath no magnitude; take it in what light you please, the clear conception of it will, if I mistake not, be found impossible; whether it be so or no I appeal to the trial of every thinking reader. And if a second fluxion be inconceivable, what are we to think of third, fourth, fifth fluxions, and so on without end?

V. The foreign mathematicians are supposed by some, even of our own, to proceed in a manner less accurate, perhaps, and geometrical, yet more intelligible. Instead of flowing quantities and their fluxions, they consider the variable finite quantities, as increasing or diminishing by the continual addition or subduction of infinitely small quantities. Instead of the velocities wherewith increments are generated, they consider the increments or decrements themselves, which they call differences, and which are supposed to be infinitely small. The difference of a line is an infinitely little line; of a plane an infinitely little plane. They suppose finite quantities to consist of parts infinitely little, and curves to be polygons, whereof the sides are infinitely little, which by the angles they make one with another determine the curvity of the line. Now to conceive a quantity infinitely small, that is, infinitely less than any sensible or imaginable quantity, or any the least finite magnitude, is, I confess, above my capacity. But to conceive a part of such infinitely small quantity, that shall be still infinitely less than it, and consequently though multiplied

Digitized by Google

infinitely shall never equal the minutest finite quantity, is, I suspect, an infinite difficulty to any man whatsoever; and will be allowed such by those who candidly say what they think; provided they really think and reflect, and do not take things upon trust.

VI. And yet in the *calculus differentialis*, which method serves to all the same intents and ends with that of fluxions, our modern analysts are not content to consider only the differences of finite quantities: they also consider the differences of those differences, and the differences of the differences of the first differences: and so on *ad infinitum*. That is, they consider quantities infinitely less than the least discernible quantity; and others infinitely less than those infinitely small ones; and still others infinitely less than the preceding infinitesimals, and so on without end or limit. Insomuch that we are to admit an infinite succession of infinitesimals, each infinitely less than the foregoing, and infinitely greater than the following. As there are first, second, third, fourth, fifth, &c. fluxions, so there are differences, first, second, third, fourth, &c. in an infinite progression towards nothing, which you still approach and never arrive at. And (which is most strange) although you should take a million of millions of these infinitesimal, each whereof is supposed infinitely greater than some other real magnitude, and add them to the least given quantity, it shall be never the bigger. For this is one of the modest *postulata* of our modern mathematicians, and is a corner-stone or ground-work of their speculations.

VII. All these points, I say, are supposed and believed by certain rigorous exactors of evidence in religion, men who pretend to believe no further than they can see. That men who have been conversant only about clear points, should with difficulty admit obscure ones, might not seem altogether unaccountable. But he who can digest a second or third fluxion, a second or third

Digitized by Google

difference, need not, methinks, be squeamish about any point in divinity. There is a natural presumption that men's faculties are made alike. It is on this supposition that they attempt to argue and convince one another. What therefore shall appear evidently impossible and repugnant to one, may be presumed the same to another. But with what appearance of reason shall any man presume to say, that mysteries may not be objects of faith, at the same time that he himself admits such obscure mysteries to be the object of science?

VIII. It must indeed be acknowledged, the modern mathematicians do not consider these points as mysteries, but as clearly conceived and mastered by their comprehensive minds. They scruple not to say, that by the help of these new analytics they can penetrate into infinity itself: that they can even extend their views beyond infinity: that their art comprehends not only infinite, but infinite of infinite (as they express it), or an infinity of infinites. But, notwithstanding all these assertions and pretensions, it may be justly questioned whether, as other men in other inquiries are often deceived by words or terms, so they likewise are not wonderfully deceived and deluded by their own peculiar signs, symbols, or species. Nothing is easier than to devise expressions or notations for fluxions and infinitesimals of the first, second, third, fourth, and subsequent orders, proceeding in the same regular form

$$\dot{x}.\ \ddot{x}.\ \dddot{x}.\ \ddddot{x}.\ \&c.$$

without end or limit $x.\ x.\ x.\ x.$ &c. or $dx.\ ddx.\ dddx.\ ddddx.$ &c. These expressions, indeed, are clear and distinct, and the mind finds no difficulty in conceiving them to be continued beyond any assignable bounds. But if we remove the veil and look underneath, if laying aside the expressions we set ourselves attentively to consider the things themselves, which are supposed to be expressed or marked thereby, we shall discover much emptiness, darkness, and confusion; nay, if I mistake not,

Digitized by Google

direct impossibilities and contradictions. Whether this be the case or no, every thinking reader is entreated to examine and judge for himself.

IX. Having considered the object, I proceed to consider the principles of this new analysis by momentums, fluxions, or infinitesimals; wherein if it shall appear that your capital points, upon which the rest are supposed to depend, include error and false reasoning; it will then follow that you, who are at a loss to conduct yourselves, cannot with any decency set up for guides to other men. The main point in the method of fluxions is to obtain the fluxion or momentum of the rectangle or product of two intermediate quantities. Inasmuch as from thence are derived rules for obtaining the fluxions of all other products and powers; be the coefficients or the indexes what they will, integers or fractions, rational or surd. Now this fundamental point one would think should be very clearly made out, considering how much is built upon it, and that its influence extends throughout the whole analysis. But let the reader judge. This is given for demonstration.* Suppose the product or rectangle $A\,B$ increased by continual motion: and that the momentaneous increments of the sides A and B are a and b. When the sides A and B were deficient, or lesser by one half of their moments, the rectangle was $\overline{A - \frac{1}{2}a} \times \overline{B - \frac{1}{2}b}$, i. e. $A\,B - \frac{1}{2}a\,B - \frac{1}{2}b\,A + \frac{1}{4}a\,b$. And as soon as the sides A and B are increased by the other two halves of their moments, the rectangle becomes $\overline{A + \frac{1}{2}a} \times \overline{B + \frac{1}{2}b}$ or $A\,B + \frac{1}{2}a\,B + \frac{1}{2}b\,A + \frac{1}{4}a\,b$. From the latter rectangle subduct the former, and the remaining difference will be $a\,B + b\,A$. Therefore the increment of the rectangle generated by the entire increments a and b is $a\,B + b\,A$ *Q. E. D.* But it is plain that the direct and true method to obtain the moment or increment of the rect-

* Naturalis Philosophiæ Principia Mathematica, lib. ii. lem. 2.

Digitized by Google

angle $A\ B$, is to take the sides as increased by their whole increments, and so multiply them together, $A + a$ by $B + b$, the product whereof $A\ B + a\ B + b\ A + a\ b$ is the augmented rectangle; whence, if we subduct $A\ B$ the remainder $a\ B + b + A\ a$ b will be the true increment of the rectangle, exceeding that which was obtained by the former illegitimate and indirect method by the quantity $a\ b$. And this holds universally by the quantities a and b be what they will, big or little, finite or infinitesimal, increments, moments, or velocities. Nor will it avail to say that $a\ b$ is a quantity exceeding small: since we are told that *in rebus mathematicis errores quam minimi non sunt contemnendi.*

X. * Such reasoning as this for demonstration, nothing but the obscurity of the subject could have encouraged or induced the great author of the fluxionary method to put upon his followers, and nothing but an implicit deference to authority could move them to admit. The case indeed is difficult. There can be nothing done till you have got rid of the quantity $a\ b$. In order to this the notion of fluxions is shifted: it is placed in various lights: points which should be clear as first principles are puzzled; and terms which should be steadily used are ambiguous. But notwithstanding all this address and skill, the point of getting rid of $a\ b$ cannot be obtained by legitimate reasoning. If a man by methods, not geometrical or demonstrative, shall have satisfied himself of the usefulness of certain rules; which he afterwards shall propose to his disciples for undoubted truths; which he undertakes to demonstrate in a subtile manner, and by the help of nice and intricate notions; it is not hard to conceive that such his disciples may, to save themselves the trouble of thinking, be inclined to confound the usefulness of a rule with the certainty of a truth, and accept the one for the other; especially if they are men accustomed rather to compute

* Introd. ad Quadraturam Curvarum.

Digitized by Google

than to think; earnest rather to go on fast and far, than solicitous to set out warily and see their way distinctly.

XI. The points or mere limits of nascent lines are undoubtedly equal, as having no more magnitude one than another, a limit as such being no quantity. If by a momentum you mean more than the initial limit, it must be either a finite quantity or an infinitesimal. But all finite quantities are expressly excluded from the notion of a momentum. Therefore the momentum must be an infinitesimal. And, indeed, though much artifice hath been employed to escape or avoid the admission of quantities infinitely small, yet it seems ineffectual. For aught I see, you can admit no quantity as a medium between a finite quantity and nothing, without admitting infinitesimals. An increment generated in a finite particle of time, is itself a finite particle; and cannot therefore be a momentum. You must therefore take an infinitesimal part of time wherein to generate your momentum. It is said, the magnitude of moments is not considered; and yet these same moments are supposed to be divided into parts. This is not easy to conceive, no more than it is why we should take quantities less than A and B in order to obtain the increment of $A\,B$, of which proceeding it must be owned the final cause or motive is obvious; but it is not so obvious or easy to explain a just and legitimate reason for it, or shew it to be geometrical.

XII. From the foregoing principle so demonstrated, the general rule for finding the fluxion of any power of a flowing quantity is derived.* But, as there seems to have been some inward scruple or consciousness of defect in the foregoing demonstration, and as this finding the fluxion of a given power is a point of primary importance, it hath therefore been judged proper to demonstrate the same in a different manner independent of the foregoing demonstration. But whether this other

* Philosophiæ Naturalis Principia Mathematica, lib. ii. lem. 2.

Digitized by Google

method be more legitimate and conclusive than the former, I proceed now to examine; and in order thereto shall premise the following lemma. If with a view to demonstrate any proposition, a certain point is supposed, by virtue of which certain other points are attained, and such supposed point be itself "afterwards destroyed or rejected by a contrary supposition; in that case all other points, attained thereby and consequent thereupon, must also be destroyed and rejected, so as from thenceforward to be no more supposed or applied in the demonstration." This is so plain as to need no proof.

XIII. Now the other method of obtaining a rule to find the fluxion of any power is as follows. Let the quantity x flow uniformly, and be it proposed to find the fluxion of x^n. In the same time that x by flowing becomes $x + o$, the power x^n becomes $\overline{x + o}|^n$, i. e. by the method of infinite series $x_n + n\,o\,x^{n-1} + \frac{nn-n}{2}\,o\,o\,x^{n-2}$ + &c. and the increments o and $n\,o\,x^{n-1} + \frac{nn-n}{2}\,o\,o\,x^{n-2}$ + &c. are one to another as 1 to $n\,x^{n-1} + \frac{nn-n}{2}\,o\,x_{n-2}$ + &c. Let now the increments vanish, and their last proportion will be 1 to $n\,x^{n-1}$. But it should seem that this reasoning is not fair or conclusive. For when it is said, let the increments vanish, *i.e.* let the increments be nothing, or let there be no increments, the former supposition that the increments were something, or that there were increments, is destroyed, and yet a consequence of that supposition, *i.e.* an expression got by virtue thereof, is retained. Which, by the foregoing lemma, is a false way of reasoning. Certainly when we suppose the increments to vanish, we must suppose their proportions, their expressions, and every thing else derived from the supposition of their existence, to vanish with them.

XIV. To make this point plainer, I shall unfold the reasoning, and propose it in a fuller light to your view.

Digitized by Google

It amounts therefore to this, or may in other words be thus expressed. I suppose that the quantity x flows, and by flowing is increased, and its increment I call o, so that by flowing it becomes $x + o$. And as x increaseth, it follows that every power of x is likewise increased in a due proportion. Therefore as x becomes $x + o$, x^n will become $\overline{x + o}\,|^n$: that is, according to the method of infinite series, $x^n + n\,o\,x^{n-1} + \frac{n\,n-n}{2}\,o\,o\,x_{n-2}$ + &c. And if from the two augmented quantities we subduct the root and the power respectively, we shall have remaining the two increments, to wit, o and $n\,o\,x^{n-1} + \frac{n\,n-n}{2}\,o\,o\,x^{n-2}$ + &c. which increments, being both divided by the common divisor o, yield the quotients 1 and $n\,x^{n-1} + \frac{n\,n-n}{2}\,o\,x_{n-2}$ + &c. which are therefore exponents of the ratio of the increments. Hitherto I have supposed that x flows, that x hath a real increment that o is something. And I have proceeded all along on that supposition, without which I should not have been able to have made so much as one single step. From that supposition it is that I get at the increment of x^n, that I am able to compare it with the increment of x, and that I find the proportion between the two increments. I now beg leave to make a new supposition contrary to the first, *i. e.* I will suppose that there is no increment of x, or that o is nothing; which second supposition destroys my first, and is inconsistent with it, and therefore with every thing that supposeth it. I do nevertheless beg leave to retain $n\,x^{n-1}$, which is an expression obtained in virtue of my first supposition, which necessarily presupposed such supposition, and which could not be obtained without it. All which seems a most inconsistent way of arguing, and such as would not be allowed of in divinity.

Digitized by Google

XV. Nothing is plainer than that no just conclusion can be directly drawn from two inconsistent suppositions. You may indeed suppose any thing possible; but afterwards you may not suppose any thing that destroys what you first supposed: or if you do, you must begin *de novo*. If therefore you suppose that the augments vanish, *i. e.* that there are no augments, you are to begin again, and see what follows from such supposition. But nothing will follow to your purpose. You cannot by that means ever arrive at your conclusion, or succeed in, what is called by the celebrated author, the investigation of the first or last proportions of nascent and evanescent quantities, by instituting the analysis in finite ones. I repeat it again: you are at liberty to make any possible supposition: and you may destroy one supposition by another: but then you may not retain the consequences, or any part of the consequences, of your first supposition so destroyed. I admit that signs may be made to denote either any thing or nothing: and consequently that in the original notation $x + o$, o might have signified either an increment or nothing. But then which of these soever you make it signify, you must argue consistently with such its signification, and not proceed upon a double meaning: which to do were a manifest sophism. Whether you argue in symbols or in words, the rules of right reason are still the same. Nor can it be supposed, you will plead a privilege in mathematics to be exempt from them.

XVI. If you assume at first a quantity increased by nothing, and in the expression, $x+o$, o stands for nothing, upon this supposition, as there is no increment of the root, so there will be no increment of the power; and consequently there will be none except the first, of all those members of the series constituting the power of the binomial; and will therefore never come to your expression of a fluxion legitimately by such method. Hence you are driven into the fallacious way of proceed-

Digitized by Google

ing to a certain point on the supposition of an increment, and then at once shifting your supposition to that of no increment. There may seem great skill in doing this at a certain point or period. Since if this second supposition had been made before the common division by o, all had vanished at once, and you must have got nothing by your supposition. Whereas by this artifice of first dividing, and then changing your supposition, you retain 1 and $n\,x^{n} - 1$. But, notwithstanding all this address to cover it, the fallacy is still the same. For whether it be done sooner or later, when once the second supposition or assumption is made, in the same instant the former assumption and all that you got by it is destroyed, and goes out together. And this is universally true, be the subject what it will, throughout all the branches of human knowledge; in any other of which, I believe men would hardly admit such a reasoning as this, which in mathematics is accepted for demonstration.

XVII. It may not be amiss to observe, that the method for finding the fluxion of a rectangle of two flowing quantities, as it is set forth in the Treatise of Quadratures, differs from the abovementioned taken from the second book of the Principles, and is in effect the same with that used in the *calculus differentialis*.* For the supposing a quantity infinitely diminished, and therefore rejecting it, is in effect the rejecting an infinitesimal; and indeed it requires a marvellous sharpness of discernment, to be able to distinguish between evanescent increments and infinitesimal differences. It may perhaps be said that the quantity being infinitely diminished becomes nothing, and so nothing is rejected. But according to the received principles it is evident that no geometrical quantity can by any division or subdivision whatsoever be exhausted, or reduced to nothing. Considering the various arts and devices used by the

* Analyse des Infiniment Petits, part i. prop. ii.

Digitized by Google

great author of the fluxionary method, in how many lights he placeth his fluxions, and in what different ways he attempts to demonstrate the same point; one would be inclined to think, he was himself suspicious of the justness of his own demonstrations, and that he was not enough pleased with any notion steadily to adhere to it. Thus much at least is plain, that he owned himself satisfied concerning certain points, which nevertheless he would not undertake to demonstrate to others *. Whether this satisfaction arose from tentative methods or inductions, which have often been admitted by mathematicians (for instance, by Dr. Wallis in his Arithmetic of Infinites), is what I shall not pretend to determine. But whatever the case might have been with respect to the author, it appears that his followers have shewn themselves more eager in applying his method, than accurate in examining his principles.

XVIII. It is curious to observe, what subtilty and skill this great genius employs to struggle with an insuperable difficulty; and through what labyrinths he endeavours to escape the doctrine of infinitesimals; which as it intrudes upon him whether he will or no, so it is admitted and embraced by others without the least repugnance; Leibnitz and his followers in their *calculus differentialis*, making no manner of scruple, first to suppose, and secondly to reject, quantities infinitely small: with what clearness in the apprehension and justness in the reasoning, any thinking man, who is not prejudiced in favour of those things, may easily discern. The notion or idea of an infinitesimal quantity, as it is an object simply apprehended by the mind, hath been already considered. † I shall now only observe as to the method of getting rid of such quantities, that it is done without the least ceremony. As in fluxions the point of first importance, and which paves the way to the rest, is to find the fluxion of a product of two

* See Letter to Collins, Nov. 9, 1679. † Sect. v. and vi.

Digitized by Google

indeterminate quantities, so in the *calculus differentialis* (which method is supposed to have been borrowed from the former with some small alterations) the main point is to obtain the difference of such product. Now the rule for this is got by rejecting the product or rectangle of the differences. And in general it is supposed that no quantity is bigger or lesser for the addition or subduction of its infinitesimal: and consequently no error can arise from such rejection of infinitesimals.

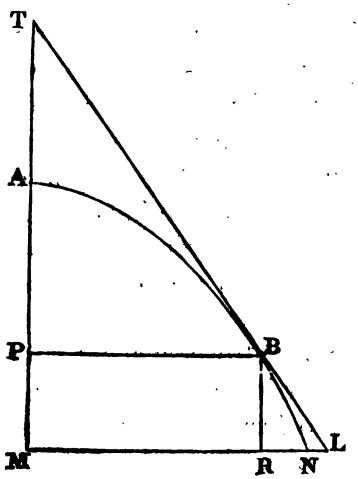
XIX. And yet it should seem that, whatever errors are admitted in the premises, proportional errors ought to be apprehended in the conclusion, be they finite or infinitesimal: and therefore the ἀκριβεία of geometry requires nothing should be neglected or rejected. In answer to this you will perhaps say, that the conclusions are accurately true, and that therefore the principles and methods from whence they are derived must be so too. But this inverted way of demonstrating your principles by your conclusions, as it would be peculiar to you gentlemen, so it is contrary to the rules of logic. The truth of the conclusion will not prove either the form or the matter of a syllogism to be true; inasmuch as the illation might have been wrong or the premises false, and the conclusion nevertheless true, though not in virtue of such illation or of such premises. I say, that in every other science men prove their conclusions by their principles, and not their principles by the conclusions. But if in yours you should allow yourselves this unnatural way of proceeding, the consequence would be that you must take up with induction, and bid adieu to demonstration. And if you submit to this, your authority will no longer lead the way in points of reason and science.

XX. I have no controversy about your conclusions, but only about your logic and method: how you demonstrate? what objects you are conversant with, and whether you conceive them clearly? what principles

Digitized by Google

you proceed upon; how sound they may be; and how you apply them? It must be remembered that I am not concerned about the truth of your theorems, but only about the way of coming at them; whether it be legitimate or illegitimate, clear or obscure, scientific or tentative. To prevent all possibility of your mistaking me, I beg leave to repeat and insist, that I consider the geometrical analyst as a logician, *i. e.* so far forth as he reasons and argues, and his mathematical conclusions, not in themselves, but in their premises; not as true or false, useful or insignificant, but as derived from such principles, and by such inferences. And forasmuch as it may perhaps seem an unaccountable paradox, that mathematicians should deduce true propositions from false principles, be right in the conclusion, and yet err in the premises; I shall endeavour particularly to explain why this may come to pass, and shew how error may bring forth truth, though it cannot bring forth science.

XXI. In order therefore to clear up this point, we will suppose for instance that a tangent is to be drawn to a parabola, and examine the progress of this affair, as it is performed by infinitesimal differences.



Digitized by Google

Let AB be a curve, the abscisse $AP = x$, the ordinate $PB = y$, the difference of the abscisse $PM = dx$, the difference of the ordinate $RN = dy$. Now, by supposing the curve to be a polygon, and consequently BN, the increment or difference of the curve, to be a straight line coincident with the tangent, and the differential triangle BRN to be similar to the triangle TPB, the subtangent PT is found a fourth proportional to RN: RB : PB : that is, to $dy : dx : y$. Hence the subtangent will be $\frac{ydx}{dy}$. But herein there is an error arising from the forementioned false supposition, whence the value of PT comes out greater than the truth: for in reality it is not the triangle RNB but RLB, which is similar to PBT, and therefore (instead of RN) RL should have been the first term of the proportion, *i. e.* $RN + NL$, *i. e.* $dy + z$: whence the true expression for the subtangent should have been $\frac{ydx}{dy+z}$. There was therefore an error of defect in making dy the divisor: which error was equal to z, *i. e.* NL the line comprehended between the curve and the tangent. Now by the nature of the curve $yy = px$, supposing p to be the parameter, whence by the rule of differences $2ydy = pdx$ and $dy = \frac{pdx}{2y}$. But if you multiply $y + dy$ by itself, and retain the whole product without rejecting the square of the difference, it will then come out, by substituting the augmented quantities in the equation of the curve, that $dy = \frac{pdx}{2y} - \frac{dydy}{2y}$ truly. There was therefore an error of excess in making $dy = \frac{pdx}{2y}$, which followed from the erroneous rule of differences. And the measure of this second error is $\frac{dydy}{2y} = z$. There-

fore the two errors being equal and contrary destroy each other; the first error of defect being corrected by a second error of excess.

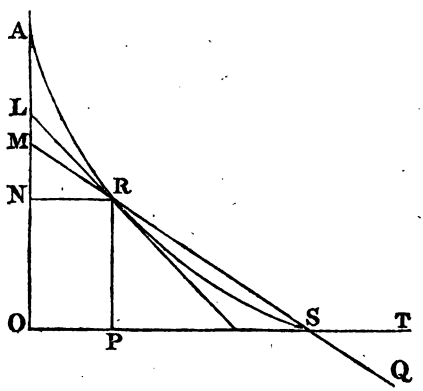
XXII. If you had committed only one error, you would not have come at a true solution of the problem. But by virtue of a twofold mistake you arrive, though not at science, yet at truth. For science it cannot be called, when you proceed blindfold, and arrive at the truth not knowing how or by what means. To demonstrate that z is equal to $\frac{dydy}{2y}$, let BR or dx be m, and RN or dy be n. By the thirty-third proposition of the first book of the Conics of Apollonius, and from similar triangles, as $2x$ to y so is m to $n + z = \frac{my}{2x}$. Likewise from the nature of the parabola $yy + 2yn + nn = xp + mp$, and $2yn + nn = mp$: wherefore $\frac{2yn+nn}{p} = m$: and because $yy = px$, $\frac{yy}{p}$ will be equal to x. Therefore substituting these values instead of m and x we shall have $n + z = \frac{my}{2x} = \frac{2yynp+ynnp}{2yyp}$: i.e. $n + z = \frac{2yn+nn}{2y}$: which being reduced gives $z = \frac{nn}{2y} = \frac{dydy}{2y}$ *Q.E.D.*

XXIII. Now I observe in the first place, that the conclusion comes out right, not because the rejected square of dy was infinitely small; but because this error was compensated by another contrary and equal error. I observe in the second place, that whatever is rejected, be it ever so small, if it be real and consequently makes a real error in the premises, it will produce a proportional real error in the conclusion. Your theorems therefore cannot be accurately true, nor your problems

Digitized by Google

accurately solved, in virtue of premises which themselves are not accurate; it being a rule in logic that *conclusio sequitur partem debiliorem.* Therefore I observe, in the third place, that when the conclusion is evident and the premises obscure, or the conclusion accurate and the premises inaccurate, we may safely pronounce that such conclusion is neither evident nor accurate, in virtue of those obscure inaccurate premises or principles; but in virtue of some other principles which perhaps the demonstrator himself never knew or thought of. I observe in the last place, that in case the differences are supposed finite quantities ever so great, the conclusion will nevertheless come out the same, inasmuch as the rejected quantities are legitimately thrown out, not for their smallness, but for another reason, to wit, because of contrary errors, which destroying each other do upon the whole cause that nothing is really though something is apparently thrown out. And this reason holds equally, with respect to quantities finite as well as infinitesimal, great as well as small, a foot or a yard long as well as the minutest increment.

XXIV. For the fuller illustration of this point, I shall consider it in another light, and proceeding in finite quantities to the conclusion, I shall only then



make use of one infinitesimal. Suppose the straight

Digitized by Google

line MQ cuts the curve AT in the points R and S. Suppose LR a tangent at the point R, AN the abscisse, NR and OS ordinates. Let AN be produced to O, and RP be drawn parallel to NO. Suppose $AN = x$, $NR = y$, $NO = v$, $PS = z$, the subsecant $MN = S$. Let the equation $y = xx$ express the nature of the curve: and supposing y and x increased by their finite increments, we get $y + z = xx + 2xv + vv$: whence the former equation being subducted, there remains $z = 2xv + vv$. And by reason of similar triangles PS: $PR :: NR : NM$, i. e. $z : v :: y : s = \frac{vy}{z}$, wherein if for y and z we substitute their values, we get $\frac{vxx}{2xv + vv} = s = \frac{xx}{2x + v}$. And supposing NO to be infinitely diminished, the subsecant NM will in that case coincide with the subtangent NL, and v as an infinitesimal may be rejected: whence it follows that $S = NL = \frac{xx}{2x} = \frac{x}{2}$; which is the true value of the subtangent. And since this was obtained by one only error, *i. e.* by once rejecting one only infinitesimal, it should seem, contrary to what hath been said, that an infinitesimal quantity or difference may be neglected or thrown away, and the conclusion nevertheless be accurately true, although there was no double mistake or rectifying of one error by another, as in the first case. But if this point be thoroughly considered, we shall find there is even here a double mistake, and that one compensates or rectifies the other. For in the first place, it was supposed, that when NO is infinitely diminished or becomes an infinitesimal, then the subsequent NM becomes equal to the subtangent NL. But this is a plain mistake; for it is evident, that as a secant cannot be a tangent, so a subsecant cannot be a subtangent. Be the difference ever

Digitized by Google

so small, yet still there is a difference. And if NO be infinitely small, there will even then be an infinitely small difference between NM and NL. Therefore NM or S was too little for your supposition (when you supposed it equal to NL), and this error was compensated by a second error in throwing out v, which last error made s bigger than its true value, and in lieu thereof gave the value of the subtangent. This is the true state of the case, however it may be disguised. And to this in reality it amounts, and is at bottom the same thing, if we should pretend to find the subtangent by having first found, from the equation of the curve and similar triangles, a general expression for all subsecants, and then reducing the subtangent under this general rule, by considering it as the subsecant when v vanishes or becomes nothing.

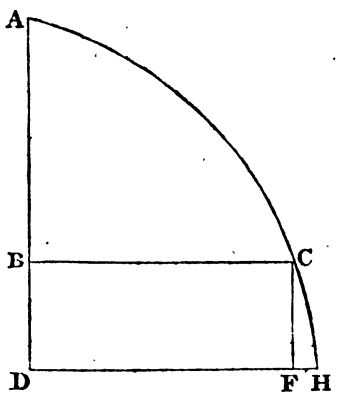
XXV. Upon the whole I observe, First, that v can never be nothing, so long as there is a secant. Secondly, that the same line cannot be both tangent and secant. Thirdly, that when v or NO* vanisheth, PS and SR do also vanish, and with them the proportionality of the similar triangles. Consequently the whole expression, which was obtained by means thereof and grounded thereupon, vanisheth when v vanisheth. Fourthly, that the method for finding secants or the expression of secants, be it ever so general, cannot in common sense extend any farther than to all secants whatsoever: and, as it necessarily supposed similar triangles, it cannot be supposed to take place where there are not similar triangles. Fifthly, that the subsecant will always be less than the subtangent, and can never coincide with it; which coincidence to suppose would be absurd: for it would be supposing the same line at the same time to cut and not to cut another given line, which is a manifest contradiction, such as subverts the hypothesis and gives a demonstration of its falsehood.

* See the foregoing figure.

Digitized by Google

Sixthly, if this be not admitted, I demand a reason why any other apagogical demonstration, or demonstration *ad absurdum* should be admitted in geometry rather than this; or that some real difference be assigned between this and others as such. Seventhly, I observe that it is sophistical to suppose NO or RP, PS, and SR to be finite real lines in order to form the triangle RPS, in order to obtain proportions by similar triangles; and afterwards to suppose there are no such lines, nor consequently similar triangles, and nevertheless to retain the consequence of the first supposition, after such supposition hath been destroyed by a contrary one. Eighthly, that although, in the present case, by inconsistent suppositions truth may be obtained, yet such truth is not demonstrated; that such method is not conformable to the rules of logic and right reason; that, however useful it may be, it must be considered only as a presumption, as a knack, an art rather an artifice, but not a scientific demonstration.

XXVI. The doctrine premised may be farther illustrated by the following simple and easy case, wherein I shall proceed by evanescent increments. Suppose $AB = x$, $BC = y$, $BD = o$, and that xx is equal to the



area ABC: it is proposed to find the ordinate y or BC.

Digitized by Google

When x by flowing becomes $x + o$, then $x x$ becomes $x x + 2 x o + o o$: and the area $A B C$ becomes $A D H$; and the increment of $x x$ will be equal to $B D H C$ the increment of the area, *i. e.* to $B C F D + C F H$. And if we suppose the curvilinear space $C F H$ to be $q o o$; then $2 x o + o o = y o + q o o$, which divided by o gives $2 x + o = y + q o$. And, supposing o to vanish, $2 x = y$; in which case $A C H$ will be a straight line, and the areas $A B C$, $C F H$, triangles. Now with regard to this reasoning, it hath been already remarked,* that it is not legitimate or logical to suppose o to vanish, *i. e.* to be nothing, *i. e.* that there is no increment, unless we reject at the same time with the increment itself every consequence of such increment, *i. e.* whatsoever could not be obtained but by supposing such increment. It must nevertheless be acknowledged, that the problem is rightly solved, and the conclusion true, to which we are led by this method. It will therefore be asked, how comes it to pass that the throwing out o is attended with no error in the conclusion? I answer, the true reason hereof is plainly this: because q being unit, $q o$ is equal to o: and therefore $2 x + o - q o = y = 2 x$, the equal quantities $q o$ and o being destroyed by contrary signs.

XXVII. As on the one hand it were absurd to get rid of o by saying, let me contradict myself; let me subvert my own hypothesis; let me take it for granted that there is no increment, at the same time that I retain a quantity, which I could never have got at but by assuming an increment: so on the other hand it would be equally wrong to imagine, that in a geometrical demonstration we may be allowed to admit any error, though ever so small, or that it is possible, in the nature of things, an accurate conclusion should be derived from inaccurate principles. Therefore o cannot be thrown out as an infinitesimal, or upon the principle that infinitesimals may be safely neglected; but only because it

* Sect. xii. and xiii. supra.

Digitized by Google

is destroyed by an equal quantity with a negative sign, whence $o - p\,o$ is equal to nothing. And as it is illegitimate to reduce an equation, by subducting from one side a quantity when it is not to be destroyed, or when an equal quantity is not subducted from the other side of the equation: so it must be allowed a very logical and just method of arguing, to conclude that if from equals either nothing or equal quantities are subducted, they shall still remain equal. And this is a true reason why no error is at last produced by the rejecting of o. Which therefore must not be ascribed to the doctrine of differences, or infinitesimals, or evanescent quantities, or momentums, or fluxions.

XXVIII. Suppose the case to be general, and that x^n is equal to the area $A\,B\,C$, whence by the method of fluxions the ordinate is found $n\,x^{n-1}$, which we admit for true, and shall inquire how it is arrived at. Now if we are content to come at the conclusion in a summary way, by supposing that the ratio of the fluxions of x and x^n is found* to be 1 and $n\,x^{n-1}$, and that the ordinate of the area is considered as its fluxion; we shall not so clearly see our way, or perceive how the truth comes out, that method as we have shewed before being obscure and illogical. But if we fairly delineate the area and its increment, and divide the latter into two parts $B\,C\,F\,D$ and $C\,F\,H$,† and proceed regularly by equations between the algebraical and geometrical quantities, the reason of the thing will plainly appear. For as x^n is equal to the area $A\,B\,C$, so is the increment of x^n equal to the increment of the area, *i. e.* to $B\,D\,H\,C$; that is to say, $n\,o\,x^{n-1} + \frac{n\,n-n}{2}\,o\,o\,x^{n-2} + \&c. = B\,D\,F\,C + C\,F\,H$. And only the first members on each side of the equation being retained, $n\,o\,x^{n-1} = B\,D\,F\,C$: and dividing both sides by o or $B\,D$, we shall get $n\,x^{n-1} = B\,C$. Admitting therefore, that the curvili-

* Sect. xiii. † See the figure in sect. xxvi.

Digitized by Google

near space CFH is equal to the rejectaneous quantity $\frac{nn-n}{2} oo x^{n-2}$ + &c. and that when this is rejected on one side, that is rejected on the other, the reasoning becomes just and the conclusion true. And it is all one whatever magnitude you allow to BD, whether that of an infinitesimal difference or a finite increment ever so great. It is therefore plain, that the supposing the rejectaneous algebraical quantity to be an infinitely small or evanescent quantity, and therefore to be neglected, must have produced an error, had it not been for the curvilinear spaces being equal thereto, and at the same time subducted from the other part or side of the equation, agreeably to the axiom; *If from equals you subduct equals, the remainders will be equal.* For those quantities which by the analysts are said to be neglected, or made to vanish, are in reality subducted. If therefore the conclusion be true, it is absolutely necessary that the finite space CFH be equal to the remainder of the increment expressed by $\frac{nn-n}{2} oo x^{n-2}$ &c. equal, I say, to the finite remainder of a finite increment.

XXIX. Therefore, be the power what you please, there will arise on one side an algebraical expression, on the other a geometrical quantity, each of which naturally divides itself into three members: the algebraical or fluxionary expression into one, which includes neither the expression of the increment of the absciss nor of any power thereof, another which includes the expression of the increment itself, and the third including the expression of the powers of the increment. The geometrical quantity also or whole increased area consists of three parts or members, the first of which is the given areas, the second a rectangle under the ordinate and the increment of the absciss, and the third a curvilinear space. And, comparing the homologous or cor-

Digitized by Google

respondent members on both sides, we find that as the first member of the expression is the expression of the given area, so the second member of the expression will express the rectangle or second member of the geometrical quantity; and the third, containing the powers of the increment, will express the curvilinear space, or third member of the geometrical quantity. This hint may perhaps be further extended, and applied to good purpose, by those who have leisure and curiosity for such matters. The use I make of it is to shew, that the analysis cannot obtain in augments or differences, but it must also obtain in finite quantities, be they ever so great, as was before observed.

XXX. It seems therefore upon the whole, that we may safely pronounce the conclusion cannot be right, if in order thereto any quantity be made to vanish, or be neglected, except that either one error is redressed by another; or that, secondly, on the same side of an equation equal quantities are destroyed by contrary signs, so that the quantity we mean to reject is first annihilated; or, lastly, that from the opposite sides equal quantities are subducted. And therefore to get rid of quantities by the received principles of fluxions or of differences, is neither good geometry nor good logic. When the augments vanish, the velocities also vanish. The velocities or fluxions are said to be *primo* and *ultimo*, as the augments nascent and evanescent. Take therefore the *ratio* of the evanescent quantities, it is the same with that of the fluxions: it will therefore answer all intents as well. Why then are fluxions introduced? Is it not to shun or rather to palliate the use of quantities infinitely small? But we have no notion whereby to conceive and measure various degrees of velocity, besides space and time, or when the times are given, besides space alone. We have even no notion of velocity prescinded from time and space. When therefore a point is supposed to move in given times, we have no notion

Digitized by Google

of greater or lesser velocities or of proportions between velocities, but only of longer or shorter lines, and of proportions between such lines generated in equal parts of time.

XXXI. A point may be the limit of a line: a line may be the limit of a surface: a moment may terminate time. But how can we conceive a velocity by the help of such limits? It necessarily implies both time and space, and cannot be conceived without them. And if the velocities of nascent and evanescent quantities, *i. e.* abstracted from time and space, may not be comprehended, how can we comprehend and demonstrate their proportions; or consider their *rationes primæ* and *ultimæ?* For to consider the proportion or *ratio* of things implies that such things have magnitude; that such their magnitudes may be measured, and their relations to each other known. But, as there is no measure of velocity except time and space, the proportion of velocities being only compounded of the direct proportion of the spaces and the reciprocal proportion of the times; doth it not follow that to talk of investigating, obtaining, and considering the proportions of velocities, exclusively of time and space, is to talk unintelligibly?

XXXII. But you will say that, in the use and application of fluxions, men do not overstrain their faculties to a precise conception of the abovementioned velocities, increments, infinitesimals, or any other such-like ideas of a nature so nice, subtile, and evanescent. And therefore you will perhaps maintain, that problems may be solved without those inconceivable suppositions; and that, consequently, the doctrine of fluxions, as to the practical part, stands clear of all such difficulties. I answer, that if in the use or application of this method those difficult and obscure points are not attended to, they are nevertheless supposed. They are the foundations on which the moderns build the principles on which they proceed, in solving problems and discovering theorems.

Digitized by Google

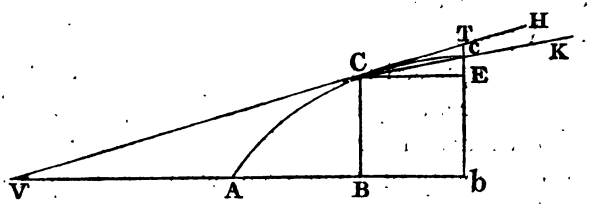
It is with the method of fluxions as with all other methods, which presuppose their respective principles and are gounded thereon; although the rules may be practised by men who neither attend to nor perhaps know the principles. In like manner, therefore, as a sailor may practically apply certain rules derived from astronomy and geometry, the principles whereof he doth not understand; and as any ordinary man may solve divers numerical questions, by the vulgar rules and operations of arithmetic, which he performs and applies without knowing the reasons of them: even so it cannot be denied that you may apply the rules of the fluxionary method; you may compare and reduce particular cases to general forms; you may operate and compute and solve problems thereby, not only without an actual attention to, or an actual knowledge of, the grounds of that method, and the principles whereon it depends, and whence it is deduced, but even without having ever considered or comprehended them.

XXXIII. But then it must be remembered, that in such cases although you may pass for an artist, computist, or analyst, yet you may not be justly esteemed a man of science and demonstration. Now should any man, in virtue of being conversant in such obscure analytics, imagine his rational faculties to be more improved than those of other men, which have been exercised in a different manner, and on different subjects; much less erect himself into a judge and an oracle, concerning matters that have no sort of connexion with or dependence on those species, symbols or signs, in the management whereof he is so conversant and expert. As you, who are a skilful computist or analyst, may not therefore be deemed skilful in anatomy; or *vice versa*, as a man who can dissect with art, may, nevertheless, be ignorant in your art of computing: even so you may both, notwithstanding your peculiar skill in your respective arts, be alike unqualified to decide upon logic,

Digitized by Google

or metaphysics, or ethics, or religion. And this would be true, even admitting that you understood your own principles and could demonstrate them.

XXXIV. If it is said, that fluxions may be expounded or expressed by finite lines proportional to them; which finite lines, as they may be distinctly conceived and known and reasoned upon, so they may be substituted for the fluxions, and their mutual relations or proportions be considered as the proportions of fluxions; by which means the doctrine becomes clear and useful: I answer that if, in order to arrive at these finite lines proportional to the fluxions, there be certain steps made use of which are obscure and inconceivable, be those finite lines themselves ever so clearly conceived, it must nevertheless be acknowledged, that your proceeding is not clear nor your method scientific. For instance, it is supposed that *A B* being the ab-



sciss, *B C* the ordinate, and *V C H* a tangent of the curve *A C*, *B b* or *C E* the increment of the abscss, *E c* the increment of the ordinate, which produced meets *V H* in the point *T*, and *C c* the increment of the curve. The right line *C c* being produced to *K*, there are formed three small triangles, the rectilinear *C E c*, the mixtilinear *C E c*, and the rectilinear triangle *C E T*. It is evident these three triangles are different from each other, the rectilinear *C E c* being less than the mixtilinear *C E c*, whose sides are the three increments abovementioned, and this still less than the triangle *C E T*. It is supposed that the ordinate *b c* moves into the place *B C*, so that the point *c* is coincident with the point *C*;

Digitized by Google

and the right line CK, and consequently, the curve Cc, is coincident with the tangent CH. In which case the mixtilinear evanescent triangle CEc will, in its last form, be similar to the triangle CET: and its evanescent sides CE, Ec, and Cc, will be proportional to CE, ET, and CT, the sides of the triangle CET. And therefore it is concluded, that the fluxions of the lines AB, BC, and AC, being in the last ratio of their evanescent increments, are proportional to the sides of the triangle CET, or, which is all one, of the triangle VBC similar thereunto.* It is particularly remarked and insisted on by the great author, that the points C and c must not be distant one from another, by any the least interval whatsoever: but that, in order to find the ultimate proportions of the lines CE, Ec, and Cc (*i. e.* the proportions of the fluxions or velocities) expressed by the finite sides of the triangle VBC, the points C and c must be accurately coincident, *i. e.* one and the same. A point therefore is considered as a triangle, or a triangle is supposed to be formed in a point. Which to conceive seems quite impossible. Yet some there are, who, though they shrink at all other mysteries, make no difficulty of their own, who strain at a gnat and swallow a camel.

XXXV. I know not whether it be worth while to observe, that possibly some men may hope to operate by symbols and suppositions, in such sort as to avoid the use of fluxions, momentums, and infinitesimals, after the following manner. Suppose x to be an absciss of a curve, and z another absciss of the same curve. Suppose all that the respective areas are xxx zzz: and that $z-x$ is the increment of the absciss, and $zzz-xxx$ the increment of the area, without considering how great or how small those increments may be. Divide now $zzz-xxx$ by $z-x$, and the quotient will be $zz+zx+xx$: and, supposing that z and x are equal, the

* Introd. ad Quadraturam Curvarum.

Digitized by Google

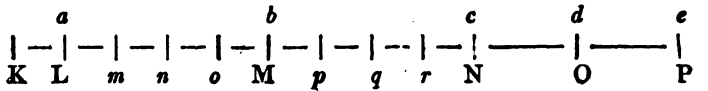
same quotient will be 3 xx, which in that case is the ordinate, which therefore may be thus obtained independently of fluxions and infinitesimals. But herein is a direct fallacy: for, in the first place, it is supposed that the abscisses z and x are unequal, without which supposition no one step could have been made; and in the second place, it is supposed they are equal; which is a manifest inconsistency, and amounts to the same thing that hath been before considered.* And there is indeed reason to apprehend, that all attempts for setting the abstruse and fine geometry on a right foundation, and avoiding the doctrine of velocities, momentums, &c. will be found impracticable, till such time as the object and end of geometry are better understood than hitherto they seem to have been. The great author of the method of fluxions felt this difficulty, and therefore he gave in to those nice abstractions and geometrical metaphysics, without which he saw nothing could be done on the received principles: and what in the way of demonstration he hath done with them the reader will judge. It must, indeed, be acknowledged, that he used fluxions, like the scaffold of a building, as things to be laid aside or got rid of, as soon as finite lines were found proportional to them. But then these finite exponents are found by the help of fluxions. Whatever therefore is got by such exponents and proportions is to be ascribed to fluxions: which must therefore be previously understood. And what are these fluxions? The velocities of evanescent increments? And what are these same evanescent increments? They are neither finite quantities, nor quantities infinitely small, nor yet nothing. May we not call them the ghosts of departed quantities?

XXXVI. Men too often impose on themselves and others, as if they conceived and understood things expressed by signs, when in truth they have no idea, save

* Sect. xv.

Digitized by Google

only of the very signs themselves. And there are some grounds to apprehend that this may be the present case. The velocities of evanescent or nascent quantities are supposed to be expressed, both by finite lines of a determinate magnitude, and by algebraical notes or signs: but I suspect that many who, perhaps never having examined the matter, take it for granted, would upon a narrow scrutiny find it impossible, to frame any idea or notion whatsoever of those velocities, exclusive of such finite quantities and signs.



Suppose the line $K\,P$ described by the motion of a point continually accelerated, and that in equal particles of time the unequal parts $K\,L$, $L\,M$, $M\,N$, $N\,O$, &c. are generated. Suppose also that a, b, c, d, e, &c. denote the velocities of the generating point, at the several periods of the parts or increments so generated. It is easy to observe, that these increments are each proportional to the sum of the velocities, with which it is described: that, consequently, the several sums of the velocities, generated in equal parts of time, may be set forth by the respective lines $K\,L$, $L\,M$, $M\,N$, &c. generated in the same times: it is likewise an easy matter to say, that the last velocity generated in the first particle of time, may be expressed by the symbol a, the last in the second by b, the last generated in the third by c, and so on: that a is the velocity of $L\,M$ in *statu nascenti*, and b, c, d, e, &c. are the velocities of the increments $M\,N$, $N\,O$, $O\,P$, &c. in their respective nascent estates. You may proceed, and consider these velocities themselves as flowing or increasing quantities, taking the velocities of the velocities, and the velocities of the velocities of the velocities, *i. e.* the first, second, third, &c, velocities *ad infinitum*: which succeeding series of velocities may be thus expressed, $a.\ b—a.\ c—2\ b+a.\ d—3\ c—3\ b—a$ &c. which

Digitized by Google

you may call by the names of first, second, third, fourth fluxions. And for an apter expression you may denote the variable flowing line *K L*, *K M*, *K N*, &c. by the letter x; and the first fluxions by $\dot{x}$, the second by $\ddot{x}$, the third by $\dddot{x}$, and so on *ad infinitum*.

XXXVII. Nothing is easier than to assign names, signs, or expressions, to these fluxions, and it is not difficult to compute and operate by means of such signs. But it will be found much more difficult, to omit the signs, and yet retain in our minds the things, which we suppose to be signified by them. To consider the exponents, whether geometrical, or algebraical, or fluxionary, is no difficult matter. But to form a precise idea of a third velocity for instance, in itself and by itself, *Hoc opus, hic labor.* Nor indeed is it an easy point, to form a clear and distinct idea of any velocity at all, exclusive of and prescinding from all length of time and space; as also from all notes, signs, or symbols, whatsoever. This, if I may be allowed to judge of others by myself, is impossible. To me it seems evident, that measures and signs are absolutely necessary, in order to conceive or reason about velocities; and that consequently, when we think to conceive the velocities, simply and in themselves, we are deluded by vain abstractions.

XXXVIII. It may perhaps be thought by some an easier method of conceiving fluxions, to suppose them the velocities wherewith the infinitesimal differences are generated. So that the first fluxions shall be the velocities of the first differences, the second the velocities of the second differences, the third fluxions the velocities of the third differences, and so on *ad infinitum*. But not to mention the insurmountable difficulty of admitting or conceiving infinitesimals, and infinitesimals of infinitesimals, &c. it is evident that this notion of fluxions would not consist with the great author's view; who

Digitized by Google

held that the minutest quantity ought not to be neglected, that therefore the doctrine of infinitesimal differences was not to be admitted in geometry, and who plainly appears to have introduced the use of velocities or fluxions, on purpose to exclude or do without them.

XXXIX. To others it may possibly seem, that we should form a juster idea of fluxions, by assuming the finite, unequal, isochronal increments $K\ L$, $L\ M$, $M\ N$, &c. and considering them in *statu nascenti*, also their increments in *statu nascenti*, and the nascent increments of those increments, and so on, supposing the first nascent increments to be proportional to the first fluxions or velocities, the nascent increments of those increments to be proportional to the second fluxions, the third nascent increments to be proportional to the third fluxions, and so onwards. And, as the first fluxions are the velocities of the first nascent increments, so the second fluxions may be conceived to be the velocities of the second nascent increments, rather than the velocities of velocities. By which means the analogy of fluxions may seem better preserved, and the notion rendered more intelligible.

XL. And indeed it should seem, that in the way of obtaining the second or third fluxion of an equation, the given fluxions were considered rather as increments than velocities. But the considering them sometimes in one sense, sometimes in another, one while in themselves, another in their exponents, seems to have occasioned no small share of that confusion and obscurity which are found in the doctrine of fluxions. It may seem therefore, that the notion might be still mended, and that instead of fluxions of fluxions, or fluxions of fluxions of fluxions, and instead of second, third, or fourth, &c. fluxions of a given quantity, it might be more consistent and less liable to exception, to say, the fluxion of the first nascent increment, *i. e.* the second fluxion; the fluxion of the second nascent increment, *i. e.* the third fluxion; the

Digitized by Google

fluxion of the third nascent increment, *i. e.* the fourth fluxion, which fluxions are conceived respectively proportional, each to the nascent principle of the increment succeeding that whereof it is the fluxion.

XLI. For the more distinct conception of all which it may be considered, that if the finite increment $L\,M$* be divided into the isochronal parts $L\,m$, $m\,n$, $n\,o$, $o\,M$; and the increment $M\,N$ into the parts $M\,p$, $p\,q$, $q\,r$, $r\,N$ isochronal to the former; as the whole increments $L\,M$, $M\,N$, are proportional to the sums of their describing velocities, even so the homologous particles $L\,m$, $M\,p$, are also proportional to the respective accelerated velocities with which they are described. And as the velocity with which $M\,p$ is generated, exceeds that with which $L\,m$ was generated, even so the particle $M\,p$ exceeds the particle $L\,m$. And in general, as the isochronal velocities describing the particles of $M\,N$ exceed the isochronal velocities describing the particles of $L\,M$, even so the particles of the former exceed the correspondent particles of the latter. And this will hold, be the said particles ever so small. $M\,N$ therefore will exceed $L\,M$ if they are both taken in their nascent states: and that excess will be proportional to the excess of the velocity b above the velocity a. Hence we may see that this last account of fluxions comes, in the upshot, to the same thing with the first. †

XLII. But notwithstanding what hath been said it must still be acknowledged, that the finite particles $L\,m$ or $M\,p$, though taken ever so small, are not proportional to the velocities a and b; but each to a series of velocities changing every moment, or, which is the same thing, to an accelerated velocity, by which it is generated, during a certain minute particle of time: that the nascent beginnings or evanescent endings of finite quantities, which are produced in moments or infinitely small parts of time, are alone proportional to given velocities: that

* See the foregoing scheme in Sect. xxxvi. † Ibid.

Digitized by Google

therefore, in order to conceive the first fluxions, we must conceive time divided into moments, increments generated in those moments, and velocities proportional to those increments: that in order to conceive second and third fluxions, we must suppose that the nascent principles or momentaneous increments have themselves also other momentaneous increments, which are proportional to their respective generating velocities: that the velocities of these second momentaneous increments are second fluxions: those of their nascent momentaneous increments third fluxions. And so on *ad infinitum*.

XLIII. By subducting the increment generated in the first moment from that generated in the second, we get the increment of an increment. And by subducting the velocity generating in the first moment from that generating in the second, we get the fluxion of a fluxion. In like manner, by subducting the difference of the velocities generating in the two first moments, from the excess of the velocity in the third above that in the second moment, we obtain the third fluxion. And after the same analogy we may proceed to fourth, fifth, sixth fluxions, &c. And if we call the velocities of the first, second, third, fourth moments, a, b, c, d, the series of fluxions will be as above, $a.\ b - a.\ c - 2\ b + a.\ d - 3\ c + 3\ b - a.$ *ad infinitum*, i. e. $\dot{x}.\ \ddot{x}.\ \dddot{x}.\ \ddddot{x}.$ *ad infinitum*.

XLIV. Thus fluxions may be considered in sundry lights and shapes, which seem all equally difficult to conceive. And, indeed, as it is impossible to conceive velocity without time or space, without either finite length or finite duration,* it must seem above the powers of men to comprehend even the first fluxions. And if the first are incomprehensible, what shall we say of the second and third fluxions, &c.? He who can conceive the beginning of a beginning, or the end of an end,

* Sect. xxxi.

Digitized by Google

somewhat before the first or after the last, may be perhaps sharpsighted enough to conceive these things. But most men will, I believe find, it impossible to understand them in any sense whatever.

XLV. One would think that men could not speak too exactly on so nice a subject. And yet, as was before hinted, we may often observe that the exponents of fluxions or notes representing fluxions are confounded with the fluxions themselves. Is not this the case, when just after the fluxions of flowing quantities were said to be the celerities of their increasing, and the second fluxions to be the mutations of the first fluxions or celerities,

$$\dot{z}\ \ddot{z}\ \dddot{z}\ \ddddot{z}\ \dddddot{z}\ \ddddddot{z}\ *$$

we are told that z. z. z. z. z. z. * represents a series of quantities, whereof each subsequent quantity is the fluxion of the preceding; and each foregoing is a fluent quantity having the following one for its fluxion?

XLVI. Divers series of quantities and expressions, geometrical and algebraical, may be easily conceived, in lines, in surfaces, in species, to be continued without end or limit. But it will not be found so easy to conceive a series, either of mere velocities or of mere nascent increments, distinct therefrom and corresponding thereunto. Some perhaps may be led to think the author intended a series of ordinates, wherein each ordinate was the fluxion of the preceding and fluent of the following, *i. e.* that the fluxion of one ordinate was itself the ordinate of another curve; and the fluxion of this last ordinate was the ordinate of yet another curve; and so on *ad infinitum.* But who can conceive how the fluxion (whether velocity or nascent increment) of an ordinate? Or more than that each preceding quantity or fluent is related to its subsequent or fluxion, as the area of curvilinear figure to its ordinate; agreeably to what the author remarks, that each preceding quantity in such series is as the area

* De Quadratura Curvarum.

Digitized by Google

of a curvilinear figure, whereof the absciss is z, and the ordinate is the following quantity?

XLVII. Upon the whole it appears that the celerities are dismissed, and instead thereof areas and ordinates are introduced. But however expedient such analogies or such expressions may be found for facilitating the modern quadratures, yet we shall not find any light given us thereby into the original real nature of fluxions; or that we are enabled to frame from thence just ideas of fluxions considered in themselves. In all this the general ultimate drift of the author is very clear, but his principles are obscure. But perhaps those theories of the great author are not minutely considered or canvassed by his disciples; who seem eager, as was before hinted, rather to operate than to know, rather to apply his rules and his forms, than to understand his principles and enter into his notions. It is nevertheless certain, that in order to follow him in his quadratures, they must find fluents from fluxions; and, in order to this, they must know to find fluxions from fluents; and in order to find fluxions, they must first know what fluxions are. Otherwise they proceed without clearness and without science. Thus the direct method precedes the inverse, and the knowledge of the principles is supposed in both. But as for operating according to rules, and by the help of general forms, whereof the original principles and reasons are not understood, this is to be esteemed merely technical. Be the principles therefore ever so abstruse and metaphysical, they must be studied by whoever would comprehend the doctrine of fluxions. Nor can any geometrician have a right to apply the rules of the great author, without first considering his metaphysical notions whence they were derived. These, how necessary soever in order to science, which can never be attained without a precise, clear, and accurate conception of the principles, are nevertheless by several carelessly passed over; while the expressions alone are dwelt on and con-

Digitized by Google

sidered and treated with great skill and management, thence to obtain other expressions by methods, suspicious and indirect (to say the least), if considered in themselves, however recommended by induction and authority; two motives which are acknowledged sufficient to beget a rational faith and moral persuasion, but nothing higher.

XLVIII. You may possibly hope to evade the force of all that hath been said, and to screen false principles and inconsistent reasonings, by a general pretence that these objections and remarks are metaphysical. But this is a vain pretence. For the plain sense and truth of what is advanced in the foregoing remarks, I appeal to the understanding of every unprejudiced intelligent reader. To the same I appeal, whether the points remarked upon are not most incomprehensible metaphysics. And metaphysics not of mine, but your own. I would not be understood to infer, that your notions are false or vain because they are metaphysical. Nothing is either true or false for that reason. Whether a point be called metaphysical or no, avails little. The question is, whether it be clear or obscure, right or wrong, well or ill deduced?

XLIX. Although momentaneous increments, nascent and evanescent quantities, fluxions and infinitesimals of all degrees, are in truth such shadowy entities, so difficult to imagine or conceive distinctly, that (to say the least) they cannot be admitted as principles or objects of clear and accurate science: and although this obscurity and incomprehensibility of your metaphysics had been alone sufficient to allay your pretensions to evidence; yet it hath, if I mistake not, been farther shewn, that your inferences are no more just than your conceptions are clear, and that your logics are as exceptionable as your metaphysics. It should seem therefore, upon the whole, that your conclusions are not attained by just reasoning from clear principles: consequently, that the

Digitized by Google

employment of modern analysts, however useful in mathematical calculations and constructions, doth not habituate and qualify the mind to apprehend clearly and infer justly; and, consequently, that you have no right, in virtue of such habits, to dictate out of your proper sphere, beyond which your judgment is to pass for no more than that of other men.

L. Of a long time I have suspected, that these modern analytics were not scientifical, and gave some hints thereof to the public about twenty-five years ago. Since which time, I have been diverted by other occupations, and imagined I might employ myself better than in deducing and laying together my thoughts on so nice a subject. And though of late I have been called upon to make good my suggestions; yet as the person, who made this call, doth not appear to think maturely enough to understand, either those metaphysics which he would refute, or mathematics which he would patronize, I should have spared myself the trouble of writing for his conviction. Nor should I now have troubled you or myself with this address, after so long an intermission of these studies; were it not to prevent, so far as I am able, your imposing on yourself and others in matters of much higher moment and concern. And to the end that you may more clearly comprehend the force and design of the foregoing remarks, and pursue them still farther in your own meditations, I shall subjoin the following queries.

Query 1. Whether the object of geometry be not the proportions of assignable extensions? And whether there be any need of considering quantities either infinitely great or infinitely small?

Qu. 2. Whether the end of geometry be not to measure assignable finite extension? And whether this practical view did not first put men on the study of geometry?

Qu. 3. Whether the mistaking the object and end

Digitized by Google

of geometry hath not created needless difficulties and wrong pursuits in that science?

Qu. 4. Whether men may properly be said to proceed in a scientific method, without clearly conceiving the object they are conversant about, the end proposed, and the method by which it is pursued?

Qu. 5. Whether it doth not suffice, that every assignable number of parts may be contained in some assignable magnitude? And whether it be not unnecessary, as well as absurd, to suppose that finite extension is infinitely divisible?

Qu. 6. Whether the diagrams in a geometrical demonstration are not to be considered as signs of all possible finite figures, of all sensible and imaginable extensions or magnitudes of the same kind?

Qu. 7. Whether it be possible to free geometry from insuperable difficulties and absurdities, so long as either the abstract general idea of extension, or absolute external extension, be supposed its true object?

Qu. 8. Whether the notions of absolute time, absolute place, and absolute motion, be not most abstractedly metaphysical? Whether it be possible for us to measure, compute, or know them?

Qu. 9. Whether mathematicians do not engage themselves in disputes and paradoxes, concerning what they neither do nor can conceive? And whether the doctrine of forces be not a sufficient proof of this?*

Qu. 10. Whether in geometry it may not suffice to consider assignable finite magnitude, without concerning ourselves with infinity? And whether it would not be righter to measure large polygons having finite sides, instead of curves, than to suppose curves are polygons of infinitesimal sides, a supposition neither true nor conceivable?

Qu. 11. Whether many points, which are not readily assented to, are not nevertheless true? And whe-

* See the Latin treatise De Motu.

Digitized by Google

ther those in the two following queries may not be of that number?

Qu. 12. Whether it be possible, that we should have had an idea or notion of extension prior to motion? Or whether if a man had never perceived motion, he would ever have known or conceived one thing to be distant from another?

Qu. 13. Whether geometrical quantity hath coexistent parts? And whether all quantity be not in a flux as well as time and motion?

Qu. 14. Whether extension can be supposed an attribute of a being immutable and eternal?

Qu. 15. Whether to decline examining the principles and unravelling the methods used in mathematics, would not shew a bigotry in mathematicians?

Qu. 16. Whether certain maxims do not pass current among analysts, which are shocking to good sense? And whether the common assumption, that a finite quantity divided by nothing is infinite, be not of this number?

Qu. 17. Whether the considering geometrical diagrams absolutely or in themselves, rather than as representatives of all assignable magnitudes or figures of the same kind, be not a principal cause of the supposing finite extension infinitely divisible; and of all the difficulties and absurdities consequent thereupon?

Qu. 18. Whether from geometrical propositions being general, and the lines in diagrams being therefore general substitutes or representatives, it doth not follow that we may not limit or consider the number of parts, into which such particular lines are divisible?

Qu. 19. When it is said or implied, that such a certain line delineated on paper contains more than any assignable number of parts, whether any more in truth ought to be understood, than that it is a sign indifferently representing all finite lines, be they ever so great. In which relative capacity it contains, *i. e.* stands for

Digitized by Google

more than any assignable number of parts? And whether it be not altogether absurd to suppose a finite line, considered in itself or in its own positive nature, should contain an infinite number of parts?

Qu. 20. Whether all arguments for the infinite divisibility of finite extention, do not suppose and imply, either general abstract ideas or absolute external extension to be the object of geometry? And therefore, whether, along with those suppositions, such arguments also do not cease and vanish?

Qu. 21. Whether the supposed infinite divisibility of finite extension hath not been a snare to mathematicians, and a thorn in their sides? And whether a quantity infinitely diminished and a quantity infinitely small, are not the same thing?

Qu. 22. Whether it be necessary to consider velocities of nascent or evanescent quantities, or moments, or infinitesimals? And whether the introducing of things so inconceivable be not a reproach to mathematics?

Qu. 23. Whether inconsistencies can be truths? Whether points repugnant and absurd are to be admitted upon any subject, or in any science? And whether the use of infinites ought to be allowed, as a sufficient pretext and apology for the admitting of such points in geometry?

Qu. 24. Whether a quantity be not properly said to be known, when we know its proportion to given quantities? And whether this proportion can be known, but by expressions or exponents, either geometrical, algebraical, or arithmetical? And whether expressions in lines or species can be useful, but so far forth as they are reducible to numbers?

Qu. 25. Whether the finding out proper expressions or notations of quantity be not the most general character and tendency of the mathematics? And

Digitized by Google

arithmetical operation that which limits and defines their use?

Qu. 26. Whether mathematicians have sufficiently considered the analogy and use of signs? And how far the specific limited nature of things corresponds thereto?

Qu. 27. Whether because, in stating a general case of pure algebra, we are at full liberty to make a character denote, either a positive or a negative quantity, or nothing at all, we may, therefore, in a geometrical case, limited by hypotheses and reasonings from particular properties and relations of figures, claim the same licence?

Qu. 28. Whether the shifting of the hypothesis, or (as we may call it) the *fallacia suppositionis* be not a sophism, that far and wide infects the modern reasonings, both in the mechanical philosophy and in the abstruse and fine geometry?

Qu. 29. Whether we can form an idea or notion of velocity distinct from and exclusive of its measures, as we can of heat distinct from and exclusive of the degrees on the thermometer, by which it is measured? And whether this be not supposed in the reasonings of modern analysts?

Qu. 30. Whether motion can be conceived in a point of space? And if motion cannot, whether velocity can? And if not, whether a first or last velocity can be conceived in a mere limit; either initial or final, of the described space?

Qu. 31. Where there are no increments, whether there can be any *ratio* of increments? Whether nothings can be considered as proportional to real quantities? Or whether to talk of their proportions be not not to talk nonsense? Also in what sense we are to understand the proportion of a surface to a line, of an area to an ordinate? And whether species or numbers,

Digitized by Google

though properly expressing quantities which are not homogeneous, may yet be said to express their proportion to each other?

Qu. 32. Whether if all assignable circles may be squared, the circle is not, to all intents and purposes, squared as well as the parabola? Or whether a parabolical area can in fact be measured more accurately than a circular?

Qu. 33. Whether it would not be righter to approximate fairly, than to endeavour at accuracy by sophisms?

Qu. 34. Whether it would not be more decent to proceed by trials and inductions, than to pretend to demonstrate by false principles?

Qu. 35. Whether there be not a way of arriving at truth, although the principles are not scientific, nor the reasoning just? And whether such a way ought to be called a knack or a science?

Qu. 36. Whether there can be science of the conclusion, where there is not evidence of the principles? And whether a man can have evidence of the principles, without understanding them? And therefore, whether the mathematicians of the present age act like men of science, in taking so much more pains to apply their principles, than to understand them?

Qu. 37. Whether the greatest genius wrestling with false principles may not be foiled? And whether accurate quadratures can be obtained without new *postulata* or assumptions? And if not, whether those which are intelligible and consistent ought not to be preferred to the contrary? See sect. xxviii. and xxix.

Qu. 38. Whether tedious calculations in algebra and fluxions be the likeliest method to improve the mind? And whether men's being accustomed to reason altogether about mathematical signs and figures, doth not make them at a loss how to reason without them?

Qu. 39. Whether whatever readiness analysts acquire in stating a problem, or finding apt expressions for

Digitized by Google

mathematical quantities, the same doth necessarily infer a proportionable ability in conceiving and expressing other matters?

Qu. 40. Whether it be not a general case or rule, that one and the same coefficient dividing equal product gives equal quotients? And yet whether such coefficient can be interpreted by o or nothing? Or whether any one will say, that if the equation $2 \times o = 5 \times o$, be divided by o, the quotient on both sides are equal? Whether therefore a case may not be general with respect to all quantities, and yet not extend to nothings, or include the case of nothing? And whether the bringing nothing under the notion of quantity may not have betrayed men into false reasoning?

Qu. 41. Whether in the most general reasonings about equalities and proportions, men may not demonstrate as well as in geometry? Whether in such demonstrations, they are not obliged to the same strict reasoning as in geometry? And whether such their reasonings are not deduced from the same axioms with those in geometry? Whether therefore algebra be not as truly a science as geometry?

Qu. 42. Whether men may not reason in species as well as in words? Whether the same rules of logic do not obtain in both cases? And whether we have at no right to expect and demand the same evidence in both?

Qu. 43. Whether an algebraist, fluxionist, geometrician, or demonstrator of any kind, can expect indulgence for obscure principles or incorrect reasonings? And whether an algebraical note or species can at the end of a process be interpreted in a sense which could not have been substituted for it at the beginning? Or whether any particular supposition can come under a general case which doth not consist with the reasoning thereof?

Qu. 44. Whether the difference between a mere computer and a man of science be not, that the one

Digitized by Google

computes on principles clearly conceived, and by rules evidently demonstrated, whereas the other doth not?

Qu. 45. Whether, although geometry be a science, and algebra allowed to be a science, and the analytical a most excellent method, in the application nevertheless of the analysis to geometry, men may not have admitted false principles and wrong methods of reasoning?

Qu. 46. Whether, although algebraical reasonings are admitted to be ever so just, when confined to signs or species as general representatives of quantity, you may not nevertheless fall into error, if, when you limit them to stand for particular things, you do not limit yourself to reason consistently with the nature of such particular things? And whether such error ought to be imputed to pure algebra?

Qu. 47. Whether the view of modern mathematicians doth not rather seem to be the coming at an expression by artifice, than the coming at science by demonstration?

Qu. 48. Whether there may not be sound metaphysics as well as unsound? Sound as well as unsound logic? And whether the modern analytics may not be brought under one of these denominations, and which?

Qu. 49. Whether there be not really a *philosophia prima*, a certain transcendental science superior to and more extensive than mathematics, which it might behove our modern analysts rather to learn than despise?

Qu. 50. Whether, ever since the recovery of mathematical learning, there have not been perpetual disputes and controversies among the mathematicians? And whether this doth not disparage the evidence of their methods?

Qu. 51. Whether any thing but metaphysics and logic can open the eyes of mathematicians and extricate them out of their difficulties?

Qu. 52. Whether upon the received principles a

Digitized by Google

quantity can by any division or subdivision, though carried ever so far, be reduced to nothing?

Qu. 53. Whether if the end of geometry be practice, and this practice be measuring, and we measure only assignable extensions, it will not follow that unlimited approximations completely answer the intention of geometry?

Qu. 54. Whether the same things which are now done by infinites may not be done by finite quantities? And whether this would not be a great relief to the imaginations and understandings of mathematical men?

Qu. 55. Whether those philomathematical physicians, anatomists, and dealers in the animal economy, who admit the doctrine of fluxions with an implicit faith. can with a good grace insult other men for believing what they do not comprehend?

Qu. 56. Whether the corpuscularian, experimental, and mathematical philosophy, so much cultivated in the last age, hath not too much engrossed men's attention; some part whereof it might have usefully employed?

Qu. 57. Whether from this and other concurring causes, the minds of speculative men have not been borne downward, to the debasing and stupifying of the higher faculties? And whether we may not hence account for that prevailing narrowness and bigotry among many who pass for men of science, their incapacity for things moral, intellectual, or theological, their proneness to measure all truths by sense and experience of animal life?

Qu. 58. Whether it be really an effect of thinking, that the same men admire the great author for his fluxions, and deride him for his religion?

Qu. 59. If certain philosophical virtuosi of the present age have no religion, whether it can be said to be want of faith?

Digitized by Google

Qu. 60. Whether it be not a juster way of reasoning, to recommend points of faith from their effects, than to demonstrate mathematical principles by their conclusions?

Qu. 61. Whether it be not less exceptionable to admit points above reason than contrary to reason?

Qu. 62. Whether mysteries may not with better right be allowed of in Divine faith than in human science?

Qu. 63. Whether such mathematicians as cry out against mysteries have ever examined their own principles?

Qu. 64. Whether mathematicians, who are so delicate in religious points, are strictly scrupulous in their own science? Whether they do not submit to authority, take things upon trust, and believe points inconceivable? Whether they have not their mysteries, and what is more, their repugnances and contradictions?

Qu. 65. Whether it might not become men, who are puzzled and perplexed about their own principles, to judge warily, candidly, and modestly, concerning other matters?

Qu. 66. Whether the modern analytics do not furnish a strong *argumentum ad hominem* against the philomathematical infidels of these times?

Qu. 67. Whether it follows from the abovementioned remarks, that accurate and just reasoning is the peculiar character of the present age? And whether the modern growth of infidelity can be ascribed to a distinction so truly valuable?

END OF VOL. II.

Printed by J. F. Dove, St. John's Square.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

UNIVERSITY OF CALIFORNIA LIBRARY
BERKELEY

Return to desk from which borrowed.
This book is DUE on the last date stamped below.

21Apr'50BG
8Jan52CW
9Jan'52LU
REC'D LD
JUN 2 1957
REC'D LD
JAN 28 1957
19Feb'57GR
IN STACKS
FEB 5 1957
22Jul'58MM
REC'D CIRC DEPT
REC'D LD
JUL 8 1958
16Nov'58BP
REC'D LD
NOV 5 1958
OCT 25 1973
31Mar'59GM
REC'D LD
MAR 23 1959
DEAD
5 May'59GM
REC'D LD
MAY 5 1959
3MAY'62BB
REC'D LD
APR 19 1962
REC'D LD
JUN 17 1963
JUL 11 '74

LD 21-100m-11,'49 (B7146s16)476

Digitized by Google

860497

B 1303
1820
v.2

THE UNIVERSITY OF CALIFORNIA LIBRARY

Digitized by Google

Digitized by Google